
FOR TR FEEDER NO.1 (GT1) BAY

GIS BAY REF. = D05 GT1

- Required Material For Interface work :

- New terminal Block -X100 SH: (13, 31A, 18, 19, 25

- New CT terminal Block -X27A SH: 23

**132kV GIS LCC
SCHEMATIC DRAWINGS**

SUBSTATION 8709

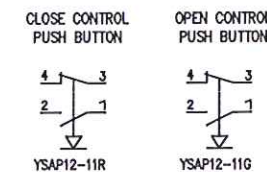
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A	PAGE :	DESIGNATION					REVISION AND DATE										
	37	TERMINAL BOX OF VT-T1					REV. 0 10.JULY.12	REV. A	REV. B	REV. C	REV. D	REV. E	REV. F	REV. G	REV. H		
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G	AS-BUILT	BY	DATE			SEC-COA 132kV/13.8kV SUBSTATION #8709											
	—	—	—			LIST OF CONTENTS											
	—	—	—			LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY											
	00	10.JULY.12	FOR APPROVAL			RIYADH SAUDI ARABIA											
	REV. NO.	DATE	DESCRIPTION			OPRG. DEPT.		ENG. DEPT.		CONTRACT NO.		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		
										11131113/00		P	C421	CA -323944	01A of 37		
															NEXT 02		
															REV. NO.		
															00		

1.LEGEND OF SYMBOLS

	M	MINIATURE CIRCUIT BREAKER		S	BREAK CONTACT GAS DENSITY METER		CT	CURRENT TRANSFORMER
	F	THERMAL RELAY		S	REED BREAKING CONTACT NOT OPERATED		VT	VOLTAGE TRANSFORMER
	S	LATE MAKE CONTACT		M	MOTOR OPERATED			
	S	EARLY BREAK CONTACT		-	EARTH			
	S	EARLY MAKE CONTACT		Y	OPERATING MAGNET COIL			
	S	LATE BREAK CONTACT		M	MOTOR AC 3 PHASE			
	S	CHANGE OVER SWITCH		T	RELAY SLOW OPERATING			
	S	PUSH BUTTON MAKE CONTACT		-	OP-AMP			
	S	PUSH BUTTON BREAK CONTACT		P	CONNECTING POINT CT'S			
	S	DOOR SWITCH		T	MAKE CONTACT DELAYED WHEN OPERATING			
	S	BLOCKING CONTACT		T	BREAK CONTACT DELAYED WHEN OPERATING			
	-	CHANGE OVER CONTACT OPERATED BY UNDER PRESSURE		T	MAKE CONTACT DELAYED WHEN RELEASING			
	S	CONTROL SWITCH		T	BREAK CONTACT DELAYED WHEN RELEASING			
	S	MAKE CONTACT GAS DENSITY METER						

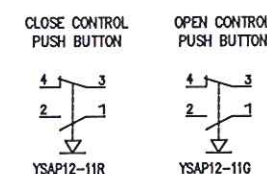
	K	RELAY		-	DISCONNECTER WITH MOTOR MECHANISM			
	K	FLAG RELAY		-	EARTH SWITCH WITH MOTOR MECHANISM			
	Y	CLOSING OR TRIPPING COIL		-	CIRCUIT BREAKER			
	P	PULSE COUNTER		CT	CURRENT TRANSFORMER			
	K	LATCHING RELAY		-	CABLE HEAD			
	M	DC - MOTOR		-	BUSHING			
	-	ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET		VTL	3 PHASE INDUCTIVE TYPE VOLTAGE TRANSFORMER			
	H	ANNUNCIATOR		-	TERMINAL (NORMAL TYPE)			
	-	OPTO - COUPLER		-	TERMINAL (KNIFE TYPE)			
	R	RESISTOR		IT	ISOLATING TERMINAL			
	D	RECTIFYING FUNCTION		-	BRIDGE OVER TERMINALS			
	H	SIGNAL LAMP & DISCREPANCY SWITCH LAMP		-	SEPARATE PLATE NEXT TO TERMINALS			
	E	FLUORESCENT LAMP		-	GAS GAUGE (GAS FILLED STATE)			
	H	DISCREPANCY SWITCH LAMP (FOR CB)						

2.DETAIL OF CONTROL SWITCHES



DETAIL OF CONTROL SWITCHES FOR DS/ES

CONTACT	OFF	ON	FUNCTION
1-2		X	OPEN
3-4	X		CLOSE

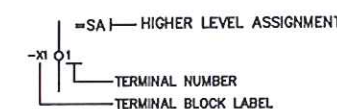


DETAIL OF CONTROL SWITCH FOR CB

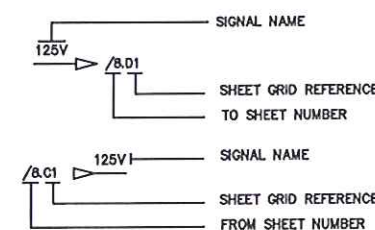
CONTACT	OFF	ON	FUNCTION
1-2		X	OPEN
3-4	X		CLOSE

3.DRAWING PRINCIPLES

PRESENTATION OF TERMINALS

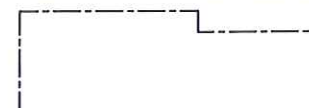


PRESENTATION OF SHEET TO SHEET REFERENCE

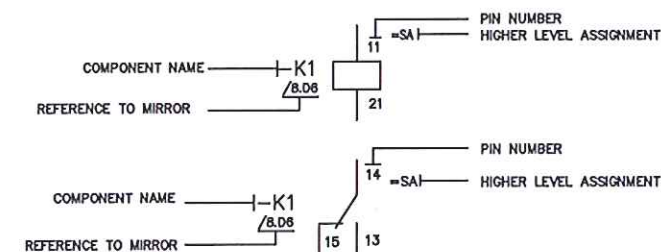


PRESENTATION ...

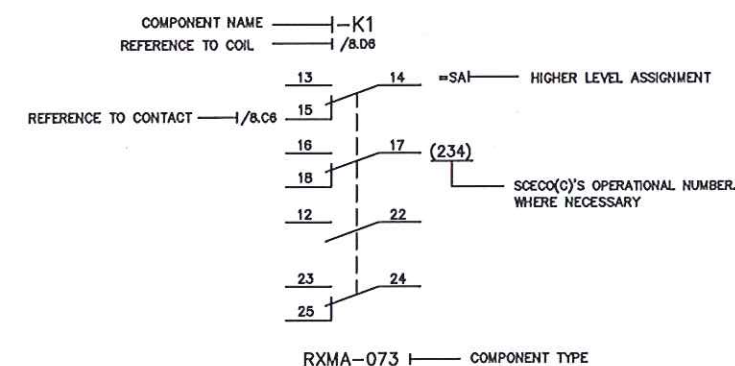
<=G1 HIGHER LEVEL ASSIGNMENT



PRESENTATION OF COMPONENTS



5. PRESENTATION OF THE MIRROR



AS-BUILT

BY

DATE

SEC-COA 132kV/13.8kV SUBSTATION #8709

LEGEND OF SYMBOLS

LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY

RIYADH

SAUDI ARABIA

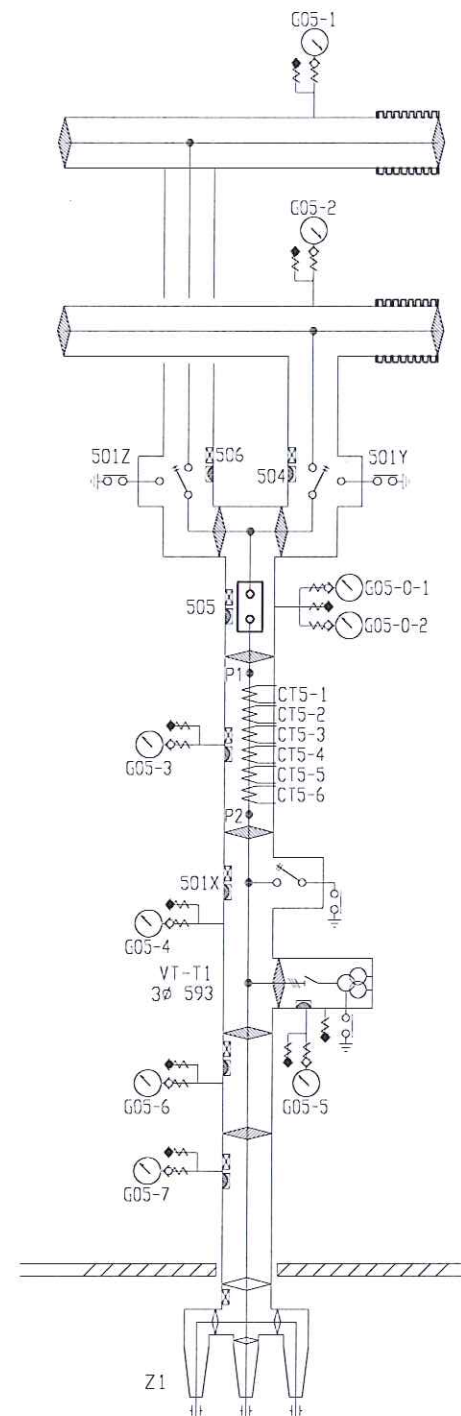
الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 02 of 37
CONTRACT NO. 1113113/00		INDEX P	PLANT NO. C421	DRAWING NUMBER CA -323944
REV. NO. 00		REV. NO. 03		REV. NO. 00

SEC-D (2004/10)

EDMS

VECTOR

SECE00



NO.1 TR.(GT1)
(D05)

NOTE

1. RATED SF6 GAS PRESSURE
CB=600 kPa (at 20°C)
MAIN BUS=400 kPa (at 20°C)
OTHERS=400 kPa (at 20°C)
2. SETTING PRESSURE (at 20°C) OF DENSITY DETECTOR IS AS FOLLOWS

EQUIPMENT	SF6 GAS PRESSURE at 20°C degree	DESCRIPTION
CB	800 kPa	HIGH PRESSURE ALARM
	550 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	500 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)
OTHERS (DS,ES,CT VT,BUS,etc)	500 kPa	HIGH PRESSURE ALARM
	370 kPa	FIRST STAGE LEAK ALARM (REFILLING STAGE)
	350 kPa	SECOND STAGE LEAK ALARM (PRESSURE FAILURE)

* ACCURACY RANGE : ±1% at 20°C, ±2.5% at -20°C ~ 60°C

3. GAS SECTION NUMBER OF GAS MONITORING IS AS FOLLOWS

DESCRIPTION
GIS BAY No. $\frac{G \times X - X}{X}$ GAS COMPARTMENT No.

4. BURSTING PRESSURE OF PRESSURE RELIEF DEVICE

CB = 1500 kPa
OTHERS = 1000 kPa

LEGEND

SYMBOL	REMARK
	NON-RETURN VALVE (NORMALLY OPEN)
	NON-RETURN VALVE (NORMALLY CLOSED)
	GAS PRESSURE GAUGE
	INSULATION SPACER (GAS TIGHT)
	INSULATION SPACER (GAS THROUGH)
	ABSORBENT ZEORAM
	RUPTURE DISC

AS-BUILT		BY _____	DATE _____
00	10.JULY.12	FOR APPROVAL	DATE STARTED 10.JULY.12 DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____

SEC-COA 132kV/13.8kV SUBSTATION #8709	
GAS SCHEME DIAGRAM	
LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 03 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323944	00

	1	2	3	4	5	6	7	8	9	10
A			SER.NO.	DESIGNATION	DESCRIPTION	SHI.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
			1	-F0	MINIATURE CIRCUIT BREAKER, DOUBLE POLE 16A, SHUNT TRIP FOR ES/DS MOTOR PROTECTION	/13.A7	1	S202P-K16+S2C-A2 +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0002 + 2CES200912R0001
			2	-F1	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(504/501Y) MOTOR DC SUPPLY	/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
			3	-F2	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR BUSBAR DISCONNECTOR WITH EARTH SWITCH(506/501Z) MOTOR DC SUPPLY	/13.A8	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
			4		(BLANK)					
			5	-F4	MINIATURE CIRCUIT BREAKER,1NO+1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR WORK EARTH SWITCH(501X) MOTOR DC SUPPLY	/13.A10	1	S202P-K6+S2C-H6R +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *3
			6	-F5	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR DS / ES DC CONTROL SUPPLY FOR FRONT BUSBAR	/13.B7	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
B			7	-F8	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR SIGNALING ALARMS DC SUPPLY	/13.B8	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
			8	-F9	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(505) PUMP MOTOR DC CONTROL SUPPLY	/13.B9	1	S202P-K16 +S2C-H6R+S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
			9	-F10	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(505) ANTIPUMPING DC CONTROL SUPPLY	/13.B9	1	S202P-K16 +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001
			10	-F11	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(505) CLOSING / OPENING OPERATIONS DC SUPPLY	/13.B10	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
			11	-F12	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(505) TRIP CIRCUIT 1 DC SUPPLY	/13.C7	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
C			12	-F13	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 16A FOR CB(505) TRIP CIRCUIT 2 DC SUPPLY	/13.C8	1	S202P-K16+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0467 + 2CES200912R0001 *2
			13	-F14	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR ANNUNCIATOR AC 220V SUPPLY	/12.D2	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
			14	-F15	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR LCC LIGHTING AC 220V SUPPLY	/12.D3	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
			15	-F16	MINIATURE CIRCUIT BREAKER,1NC AUXILIARY CONTACT, DOUBLE POLE 6A FOR POWER SOCKET AC 127V SUPPLY	/12.F3	1	S202P-K6+S2C-H6R +S2C-H6R	ABB	2CES 282 001 R0377 + 2CES200912R0001 *2
			16	-F50	THERMAL RELAY FOR CB SPRING CHARGING MOTOR. SETTING RANGE 10A (SET: 8.5A)	/16.F7	1	MT	LS	MT-L8.5
			17	-E1,-E2	FLUORESCENCE LAMP. AC 220V. 20W	/12.B4	2		J-SUNG-ELEC.CO	
D			18	-H1	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC , SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s , 40 INPUT/OUTPUT	/32.A3	1	UC725	RTK	UC625-40YW-HH-024-R-M3
			19	-H2	ANNUNCIATOR FOR LCC AND SIGNALING TO CONTROL ROOM VOLTAGE 125VDC & 220VAC , SILENCE / ACKNOWLEDGE / RESET OPTIONS, TESTING OPTION. DELAY OPTIONS 5ms TO 5s , 32 INPUT/OUTPUT	/32.A3	1	UC725	RTK	UC625-32YW-HH-024-R-M3
			20	-H40	SIGNALING LAMP FOR LOCAL CONTROL,LED TYPE,YELLOW LAMP,WHITE CAP,25# DC 125V/24V	/14.C2	1	KGPH	KG AUTO	KGPH-D1Y/W
			21	-K2	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET	/13.C9	1	RXSFI	ABB	RK 271 019-AN
			22	-K3	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR DC VOLTAGE SUPPLY SUPERVISION 1NO+2NC AUXILIARY CONTACT, SELF RESET	/24.F7	1	RXSFI	ABB	RK 271 019-AN
			23							
			24							
E			25	-K6,-K7	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT WITH 4NO AUXILIARY CONTACT	/14.D1	1	MR	LS	MR-4D(40)+UA-4(40)
			26	-K10	AUXILIARY RELAY FOR LAMP TEST, POWER CONSUMPTION 5W, DC 125V, 4NO CONTACT	/14.F1	1	MR	LS	MR-4D(40)
			27	-K8	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET	/25.E10	1	RXSFI	ABB	RK 271 019-AN
			28	-K9	SIGNAL FLAG RELAY WITH ZERO VOLTAGE FOR POWER SUPPLY 1NO+2NC AUXILIARY CONTACT, SELF RESET	/24.F4	1	RXSFI	ABB	RK 271019-AN
			29	-K11	CONTACTOR FOR BUSBAR DISCONNECTOR (504) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F8	1	MC	LS	MC-9b+UA-4(31)
			30	-K12	CONTACTOR FOR BUSBAR DISCONNECTOR (504) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F8	1	MC	LS	MC-9b+UA-4(31)
			31	-K14C -K14D	LATCHING RELAY FOR MULTIPLING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,504) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.	/21.C6	2	MR	LS	MR-4D(31)+UA-4(40)
F										
G										

AS-BUILT	BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709	الشركة الوطنية لنقل الكهرباء	نقل الكهرباء	SHEET NO.
			LIST OF APPARATUS, LCC		National Grid sa	04 of 37
			LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY	CONTRACT NO.	INDEX	PLANT NO.
			RIYADH	11131113/00	P	C421
			SAUDI ARABIA	DRAWING NUMBER		CA -323944
						00

REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.	ENG. DEPT.
00	10.JULY.12	FOR APPROVAL		

DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	

	1	2	3	4	5	6	7	8	9	10
A			SER.NO.	DESIGNATION	DESCRIPTION	SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
			31	-K21	CONTACTOR FOR MAINTENANCE EARTH SWITCH (501Y) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F9	1	MC	LS	MC-9b+UA-4(22)
			32	-K22	CONTACTOR FOR MAINTENANCE EARTH SWITCH (501Y) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/18.F10	1	MC	LS	MC-9b+UA-4(22)
			33	-K31	CONTACTOR FOR BUSBAR DISCONNECTOR (506) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)
			34	-K32	CONTACTOR FOR BUSBAR DISCONNECTOR (506) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F8	1	MC	LS	MC-9b+UA-4(31)
B			35	-K34C -K340	LATCHING RELAY FOR MULTIPLYING AUXILIARY CONTACT OF EQUIPMENT (BUSBAR DISCONNECTOR,506) 3NO+1NC WITH 4NO AUXILIARY CONTACT, POWER CONSUMPTION 5W.	/21.F6	2	MR	LS	MR-4D(31)+UA-4(40)
			36	-K41	CONTACTOR FOR MAINTENANCE EARTH SWITCH (501Z) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F9	1	MC	LS	MC-9b+UA-4(22)
			37	-K42	CONTACTOR FOR MAINTENANCE EARTH SWITCH (501Z) CONTROLLING, OPEN OPERATION, DC 125V, 4NO+1NC CONTACT WITH 2NO+2NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/19.F10	1	MC	LS	MC-9b+UA-4(22)
			38	-K51	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (505), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)
C			39	-K52	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (505), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/25.E2	1	MR	LS	MR-4D(22)
			40	-K43	AUXILIARY RELAY FOR CHECKING MOTOR OVER-TIME RUNNING (ABOVE 15MIN), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/16.F3	1	MR	LS	MR-4D(22)+AU4(22)
			41	-K44	CONTACTOR FOR MOTOR OF CB,POWER CONSUMPTION 5W, DC 125V,4NO+1NC	/16.F4	1	MC	LS	MC-22
			42	-K37	AUXILIARY RELAY FOR ANTI-PUMPING OF CIRCUIT BREAKER (505), POWER CONSUMPTION 9W, DC 125V, 2NO+2NC	/24.F2	1	HMT	HYUNDAI	HMT22(22)
			43	-K45	AUXILIARY RELAY FOR CB GAS PRESSURE CLOSING LOCKOUT(550 kPa) POWER CONSUMPTION 5W, DC 125V, 2NO+2NC	/25.E6	1	MR	LS	MR-4D(22)+UA-2(02)
D			44	-K46	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT (TRIP COIL1, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC	/24.F7	1	MR	LS	MR-4D(22)+UA-2(02)
			45	-K47	AUXILIARY RELAY FOR CB GAS PRESSURE TRIPPING LOCKOUT (TRIP COIL2, 500 kPa) POWER CONSUMPTION 5W DC 125V, 2NO+2NC	/24.F10	1	MR	LS	MR-4D(22)+UA-2(02)
			46	-K33	AUXILIARY RELAY FOR CONTROL CIRCUIT OF CIRCUIT BREAKER (505), POWER CONSUMPTION 5W, DC 125V,2NO+2NC	/24.F3	1	MR	LS	MR-4D(22)
			47	-K61	CONTACTOR FOR LINE DISCONNECTOR (501X) CONTROLLING, CLOSE OPERATION, DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/21.C4	1	MC	LS	MC-9b+UA-4(31)
E			48	-K62	CONTACTOR FOR LINE DISCONNECTOR (501X) CONTROLLING, OPEN OPERATION DC 125V, 4NO+1NC CONTACT WITH 3NO+1NC AUXILIARY CONTACT, POWER CONSUMPTION 5W	/21.C5	1	MC	LS	MC-9b+UA-4(31)
			49		(BLANK)					
			50		(BLANK)					
			51		(BLANK)					
F			52		(BLANK)					
			53		(BLANK)					
			54		(BLANK)					
			55		(BLANK)					
			56		(BLANK)					
G	AS-BUILT		BY _____		DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709			
	---	---	DRAWN BY D.H.HAN		CHECKED BY C.Y.HONG		LIST OF APPARATUS, LCC			
	00	10.JULY.12	FOR APPROVAL		DATE STARTED 10.JULY.12		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. _____		RIYADH SAUDI ARABIA			
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							CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
							11131113/00	P	C421	CA -323944
							SHEET NO. 04A of 37			
							NEXT 04B			
							REV. NO. 00			

1		2		3		4		5		6		7		8		9		10	
				SER.NO.	DESIGNATION	DESCRIPTION			SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION						
A			57		(BLANK)														
			58	-DS5	DOOR LIMIT SWITCH FOR LCC ILLUMINATION, 250V, 15A, 1NO+1NC			/12.D4	1	YSR	YONG SUNG	YSR1215GW-B							
			59	-DS6	DOOR LIMIT SWITCH FOR LCC ILLUMINATION, 250V, 15A, 1NO+1NC			/12.D4	1	YSR	YONG SUNG	YSR1215GW-B							
			60	-S40	OFF/LOCAL/BCU/REMOTE SELECTOR SWITCH, R-TYPE, MANUAL-RETURN			/14.A10	1	A14 RK4257	KRAUS&NAIMER	—							
			61	-S41	PUSH BUTTON SWITCH FOR LAMP TEST, 1NO+1NC			/14.E2	1	KGF	KG AUTO	KGFH-CM1BK							
			62	-S42	PUSH BUTTON SWITCH FOR LONG RUN ALARM STOP OF SPRING CHARGING MOTOR, 1NO+1NC			/16.F6	1	KGF	KG AUTO	KGFH-CM1R							
			63	-S43	CHANGEOVER SWITCH FOR LOCK-USE OF CB MOTOR, KNOB-TYPE, MANUAL-RETURN			/16.F5	1	CHR10	KRAUS&NAIMER	RK 6754							
			64																
			65																
			66																
B			67																
			68																
			69		(BLANK)														
			70		(BLANK)														
			71																
			72	-K1M	CONTACTOR FOR BUSBAR DISCONNECTOR WITH MAINTENANCE ES(504/501Y) MOTOR OPERATION, DC 125V, 3NO+1NC CONTACT, POWER CONSUMPTION 3W			/16.E1	1	GMD	LS	GMD-9M							
			73	-K2M	CONTACTOR FOR BUSBAR DISCONNECTOR WITH MAINTENANCE ES(506/501Z) MOTOR OPERATION, DC 125V, 3NO+1NC CONTACT, POWER CONSUMPTION 3W			/16.E2	1	GMD	LS	GMD-9M							
			74		(BLANK)														
			75	-S45	3POSITION SWITCH MANUAL OPERATION SELECTION (DS-LOCK-ES) KEY SWITCH MANUAL RETURN			/18.F1	1	CH16	KRAUS&NAIMER	RK-8350							
			76	-K37A	AUXILIARY RELAY FOR SYNCHRO CHECK. POWER CONSUMPTION 5W, DC 125V, 2NO+2NC.			/25.E3	1	MR	LS	MR-4D(22)							
C			77	-33T/-34T	ON DELAY TIMER, DC 125V, 3 TO 30 MIN. 2NO+2NC (SETTING TIME : 1 min)(A MODE)			/16.F5/24.E4	2		OMRON	H3CR-A8							
			78	-X0,-X1	TERMINAL BLOCKS FOR AC POWER SUPPLY			/12, 14	-	URTK/S	PHOENIX	0311087							
			79	-X2,-X3	TERMINAL BLOCKS FOR DC POWER SUPPLY			/13	-	URTK/S	PHOENIX	0311087							
			80	-X4	TERMINAL BLOCKS FOR LOCAL INDICATIONS			/14, 36	-	USST4	PHOENIX	3070338							
			81	-X5,-X6,-X8A,-X7	TERMINAL BLOCKS FOR BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH (504/501Y)			16 TO 27	-	USST4	PHOENIX	3070338							
			82	-X8,-X9,-X9A,-X10	TERMINAL BLOCKS FOR BUSBAR DISCONNECTOR WITH MAINTENANCE EARTH SWITCH (506/501Z)			16 TO 27	-	USST4	PHOENIX	3070338							
			83	-X11,-X12	TERMINAL BLOCKS FOR CIRCUIT BREAKER (505)			16 TO 27	-	USST4	PHOENIX	3070338							
			84		(BLANK)														
			85	-X16,-X17	TERMINAL BLOCKS FOR LINE EARTH SWITCH (501X)			16 TO 27	-	USST4	PHOENIX	3070338							
			86	-X21,-X22	TERMINAL BLOCKS WITH KNIFE TYPE TERMINALS FOR ANNUNCIATOR INPUT SIGNALS ANNUNCIATOR SIDE			/29, 30	-	UT4-MT	PHOENIX	5046139							
D			87	-X23	TERMINAL BLOCKS WITH KNIFE TYPE TERMINAL			/22, 23	-	UT4-MT	PHOENIX	5046139							
			88	-X24	TERMINAL BLOCKS WITH KNIFE TYPE TERMINALS FOR ANNUNCIATOR GROUPEED OUTPUT SIGNALS			/31	-	UT4-MT	PHOENIX	5046139							
			89	-X26A	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC.			/34, 35	-	OTTA6-T-P/P	PHOENIX	0750462							
			90	-X26B	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC.			/34, 35	-	OTTA6	PHOENIX	0750433							
			91	-X26C	BOLT CONNECTING TERMINAL BLOCK FOR CT IN LCC			/34, 35	-	OTTA6	PHOENIX	0750433							
			92	OUTLET	220V, 15A			/12.B10	1	-	LEGRAND	-							
			93	-K201,-K202,-K203 -K504	AUXILIARY RELAY FOR DS & ES OPERATION INTERLOCK, POWER CONSUMPTION 5W, DC 125V, 4NC.			/15.E2	4	MR	LS	MR-4D(04)							
			94	-TEL	DEK301-6C. TELE506 JACK.			/12.B9	1	DEK301-6C	DAE-EUN	DEK301-6C							
			95	-XT	TERMINAL BLOCKS FOR TELE506 JACK			/12.B9	1	USST4	PHOENIX	3070338							
			96	TH	THERMOSTAT -10~50DEG.C			/12.D5	1	PLS-050A		-							
E			97	HT	AL-MOLD HEATER, 500ohm, MAX 200W			/12.C5	1	RSHT-200	RARA	-							
F																			
G																			

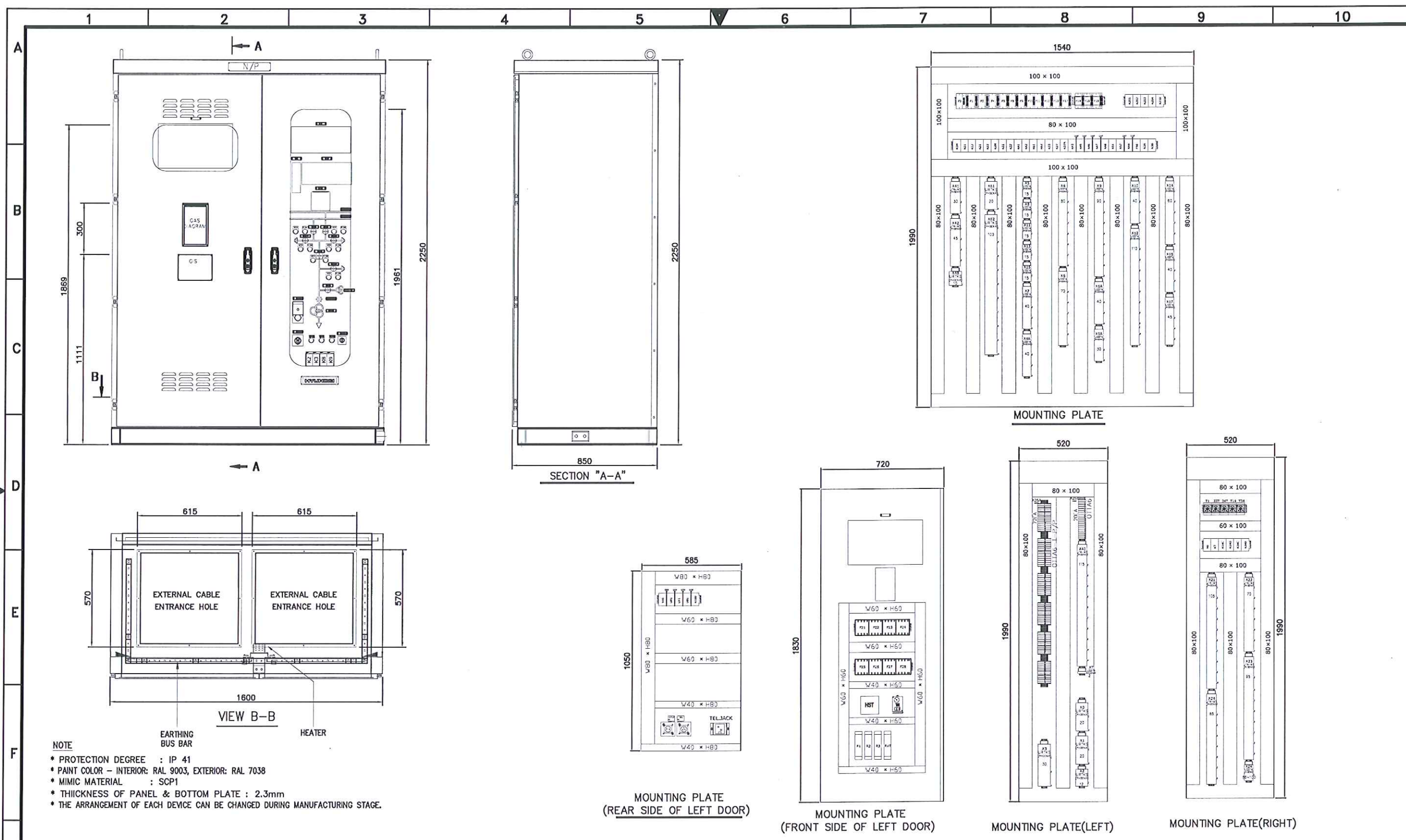
1	2	3	4	5	6	7	8	9	10
		SER.NO.	DESIGNATION	DESCRIPTION	SHT.NO	QTY	TYPE	MAKER	ORDERING INFORMATION
				< FOR GCB MOTOR SPRING OPERATING MECHANISM >					
		1	-Y1	CLOSING COIL OF CIRCUIT BREAKER. 14R, DC 125V	/24.E3	1	-	YOUJIN ELECTRO	-
		2	-Y2	TRIPPING COIL 1 OF CIRCUIT BREAKER. 12R, DC 125V	/24.E5	1	-	YOUJIN ELECTRO	-
		3	-Y3	TRIPPING COIL 2 OF CIRCUIT BREAKER. 12R, DC 125V	/24.E8	1	-	YOUJIN ELECTRO	-
		4	-M4	DC MOTOR FOR SPRING CHARGING,DC 125V, 10A, 8000rpm, I=7.9A	/16.E7	1	-	DONG JIN	-
		5	-S1	AUXILIARY CONTACT FOR CIRCUIT BREAKER, 9NO+8NC	/27	1	-	YONG SUNG	-
		6	-S2	AUXILIARY CONTACT FOR CIRCUIT BREAKER, 9NO+8NC	/27	1	-	YONG SUNG	-
		7	-S34	GAS PRESSURE METER FOR CB, 500 kPa FOR TRIP2	/24.F8	1	233.52.100	WKA	233.52.100+820.1.1.2
		8	-S35	GAS PRESSURE METER FOR CB, LOW PRESSURE 550 kPa, CLOSE BLOCK 500 kPa TRIP1	/24.25	1	233.52.100	WKA	233.52.100+820.1.1.2
		9	HT	AL-MOLD HEATER, 500ohm, MAX 200W	/13	1	RSHT 200	HYUNDAI	-
				< FOR MOTOR OPERATING MECHANISM OF 3POSITION SWITCH >					
		1	-M2	DC MOTOR, DC125V, 100W, 2A, 3600±10% RPM	/16	1	DMK D80180-125A	DMK	-
		2	-LSA	LIMIT SWITCH(ON: WHEN DS/ES IS OPEN), DC125V, 1NO+1NC.	/18,19,20	1	SAS-00E	SCHALTBAU	-
		3	-LSB	LIMIT SWITCH(ON: WHEN DS/ES IS CLOSED), DC125V, 1NO+1NC.	/18,19,20	1	SAS-00E	SCHALTBAU	-
		4	-DS1	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.	/18,19,20	1	SAS-00E	SCHALTBAU	-
		5	-DS2	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.	/18,19,20	1	SAS-00E	SCHALTBAU	-
		6	-DS3	DOOR S/W(ON: WHEN OPENING OF BOX COVER), DC125V, 10A.	/18,19,20	1	SAS-00E	SCHALTBAU	-
		7	-ILMD	INTERLOCK MAGNET, DC 125V, 7W 698ohm	/18,19,20	1	3CF5265-001	MOTION TECH.	-
		8	-ILME	INTERLOCK MAGNET, DC 125V, 7W 698ohm	/18,19,20	1	3CF5265-001	MOTION TECH.	-
		9	-PS1	PADLOCK KEY SWITCH, 125V, 10A	/18,19,20	1	KH-302K	KUN HEUNG	KH-302K-2105
		10	HT	HEATER, 2kohm, MAX 60W	/13	1	RWH 60 HOS	SAM WHA	-
				< FOR MOTOR SPRING MECHANISM OF 501X >					
		1	-M1	DC MOTOR,DC 125V,210W,12300rpm,WITH DAMPING RESISTOR-RM(RWH 60HOS,100ohm), I _N =3.2A	/16	1	DM-40011(SS)	DONG JIN	DM-40011
		2	-DS1	DOOR SWITCH,10A (ON : WHEN OPEN MECHANISM BOX COVER)	/21	-	SAS-00E	SCHALTBAU	-
		3	-SS1	SHUTTER SWITCH,10A (OFF : WHEN INSERT MANUAL HANDLE)	/21	1	SAS-00E	SCHALTBAU	-
		4	-S1	AUXILIARY CONTACT, 6NO(LATE MAKE)+6NC(EARLY BREAK)	/27	1	-	DAE YOUNG	-
		5	-S2	AUXILIARY CONTACT 5NO(EARLY MAKE+4LATE MAKE)+5NC(1LATE BREAK+4EARLY BREAK)	/27	1	-	DAE YOUNG	-
		6	-PS1	PADLOCK KEY SWITCH, 125V, 10A	/21	-	KH-302K	KUN HEUNG	KH-302K-2105
		7	HT	HEATER, 2kohm, MAX 60W	/13	1	RWH 60 HOS	SAM WHA	-
				< FOR GENERAL GAS COMPARTMENTS, EXCEPT CIRCUIT BREAKER >					
		1	-S21	GAS PRESSURE METER FOR GAS COMP. G05-1, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.C6	1	233.52.100	WKA	233.52.100+820.2.2.1
		2	-S22	GAS PRESSURE METER FOR GAS COMP. G05-2, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.C7	1	233.52.100	WKA	233.52.100+820.2.2.1
		3	-S23	GAS PRESSURE METER FOR GAS COMP. G05-3, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.C8	1	233.52.100	WKA	233.52.100+820.2.2.1
		4	-S24	GAS PRESSURE METER FOR GAS COMP. G05-4, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.C9	1	233.52.100	WKA	233.52.100+820.2.2.1
		5	-S25	GAS PRESSURE METER FOR GAS COMP. G05-5, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.D6	1	233.52.100	WKA	233.52.100+820.2.2.1
		6	-S26	GAS PRESSURE METER FOR GAS COMP. G05-6, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.D7	1	233.52.100	WKA	233.52.100+820.2.2.1
		7	-S27	GAS PRESSURE METER FOR GAS COMP. G05-7, LOW PRESSURE 350&370 kPa HIGH DENSITY 500 kPa	/28.D8	1	233.52.100	WKA	233.52.100+820.2.2.1
				< FOR CT SECONDARY TERMINAL BOX >					
		1	-X50	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)	/34	1		HYUNDAI	
		2	-X51	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)	/34	1		HYUNDAI	
		3	-X52	EPOXY INSULATED GAS SEALING TERMINALS (16 POLES)	/34	1		HYUNDAI	

AS-BUILT	BY	DATE
—	—	—
00	10.JULY.12	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	—
OPRG. DEPT.	—	ENG. DEPT.	—

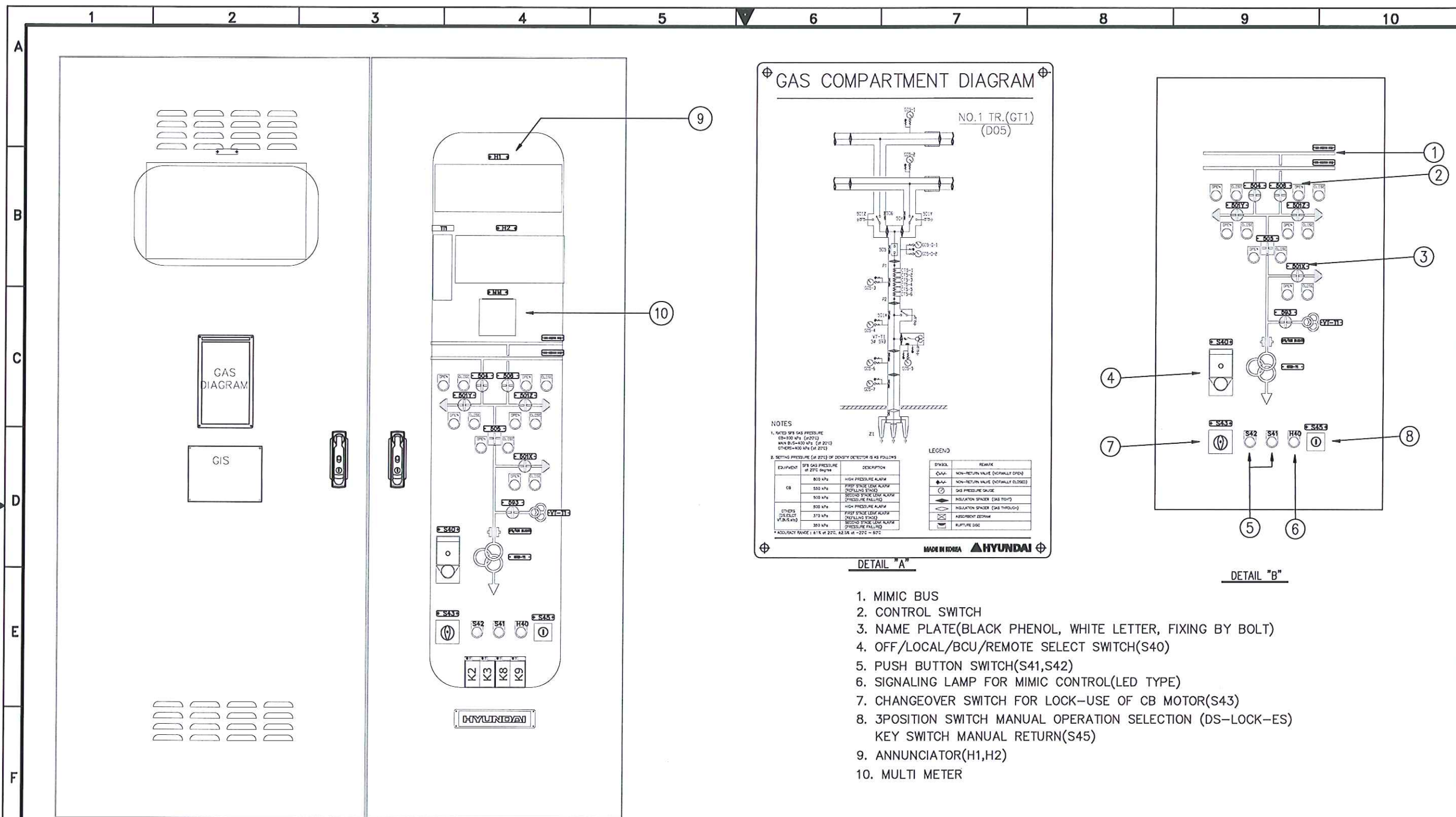
SEC-COA 132kV/13.8kV SUBSTATION #8709
LIST OF APPARATUS, MECHANISM
LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء	نقل الكهرباء	SHEET NO.	05 of 37
National Grid sa		NEXT	06
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER
11131113/00	P	C421	CA -323944
			REV. NO.
			00



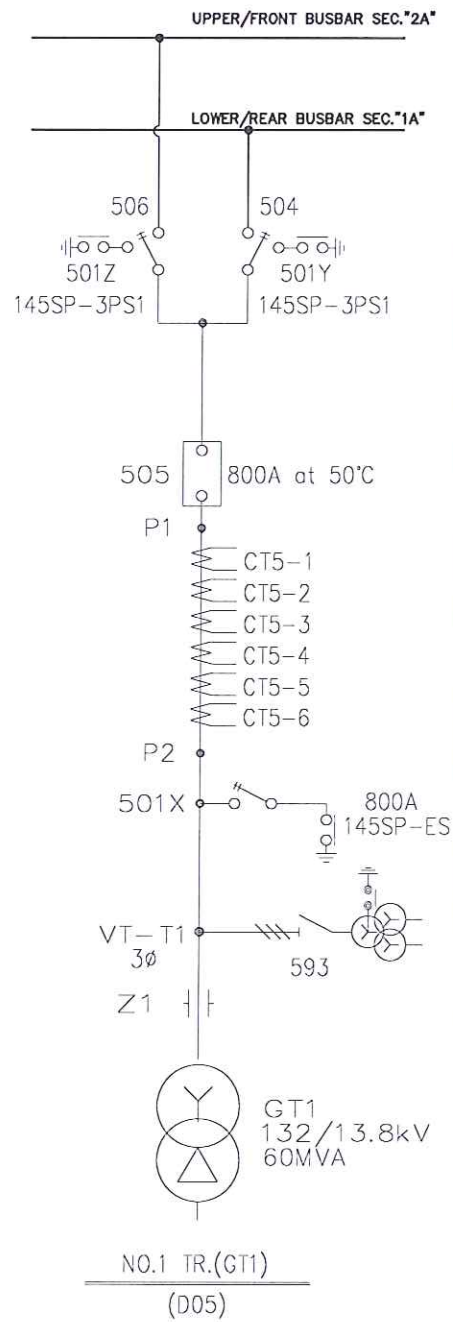
AS-BUILT			BY _____		DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO.	
00			10.JULY.12		FOR APPROVAL		OUTLINE-INTERNAL ARRANGEMENT OF LCC			National Grid sa			06 of 37	
REV. NO.			DATE		DESCRIPTION		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			CONTRACT NO.			NEXT	
							RIYADH			INDEX			07	
							SAUDI ARABIA			PLANT NO.			REV. NO.	
										DRAWING NUMBER			00	
										11131113/00				
										P				
										C421				
										CA -323944				

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1. MIMIC BUS
2. CONTROL SWITCH
3. NAME PLATE(BLACK PHENOL, WHITE LETTER, FIXING BY BOLT)
4. OFF/LOCAL/BCU/REMOTE SELECT SWITCH(S40)
5. PUSH BUTTON SWITCH(S41,S42)
6. SIGNALING LAMP FOR MIMIC CONTROL(LED TYPE)
7. CHANGEOVER SWITCH FOR LOCK-USE OF CB MOTOR(S43)
8. 3POSITION SWITCH MANUAL OPERATION SELECTION (DS-LOCK-ES)
KEY SWITCH MANUAL RETURN(S45)
9. ANNUNCIATOR(H1,H2)
10. MULTI METER

AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 07 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		FRONT ARRANGEMENT OF LCC						NEXT 08	
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		CONTRACT NO. 11131113/00		INDEX P		REV. NO. 00	
FOR APPROVAL			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH SAUDI ARABIA		PLANT NO. C421		DRAWING NUMBER CA -323944			
REV. NO.	DATE	DESCRIPTION										



BAY REF.	EQUIPMENT REF.	CONTROL	STATUS OF THE RELATED EQUIPMENT																							CONTROL & SIGNALLING			REMARKS		
			D05					D130			D120								D230			13.8kV CB	13.8kV ES	NOTE	BCU + LCC	SAS	CRCC				
			506	501Y	504	501Z	505	501X	136	130	134	226A	226B	124A	120	124B	261A	141A	261B	141B	236							230		234	
NO.1 TR GT1 BAY (D05)	506	CLOSE / OPEN	-	F0	F0	F0	0	F0	-	-	-	-	-	-	F0	-	-	-	-	-	-	-	-	-	0	-	-	C+S	C+S	C+S	SERVICE
			-	F0	FC	F0	-	F0	FC	C	FC	-	-	-	-	-	F0	-	-	-	-	-	-	-	0	-	-				
			-	F0	FC	F0	-	F0	-	-	-	FC	FC	FC	C	FC	F0	-	-	-	FC	C	FC	-	0	-	-				
			-	FC	-	F0	-	-	-	-	-	-	-	-	-	-	FC	-	-	-	-	-	-	-	-	-	-	-	C+S	S	S
	501Y	CLOSE / OPEN	F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	S	S	-
	504	CLOSE / OPEN	F0	F0	-	F0	0	F0	-	-	-	-	-	-	-	-	F0	-	-	-	-	-	-	-	0	-	-	C+S	C+S	C+S	SERVICE
			FC	F0	-	F0	-	F0	FC	C	FC	-	-	-	-	-	F0	-	-	-	-	-	-	-	0	-	-				
			FC	F0	-	F0	-	F0	-	-	-	FC	FC	FC	C	FC	-	F0	-	-	FC	C	FC	-	0	-	-				
			-	F0	-	FC	-	-	-	-	-	-	-	-	-	-	-	FC	-	-	-	-	-	-	-	-	-	-	-	C+S	S
	501Z	CLOSE / OPEN	F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	S	S	-
	505	CLOSE	FC	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1,3	-	S	C+S	C+S	SERVICE
			F0	-	FC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	1,3	-				
			F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-				
		OPEN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	C+S	C+S	C+S	-
			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,5	-	S	S	
501X	CLOSE / OPEN	F0	-	F0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	TEST	-	2	-	C+S	S	S	-	

* NOTE

1 : PROTECTION RELAY RESET

2 : 13.8kV MV CB IN DRAWOUT /TEST POSITION

3 : CB GAS PRESSURE > CB GAS PRESSURE LOW STAGE 1

4 : PROTECTION RELAYS OPERATED

5 : CB GAS PRESSURE > CB GAS PRESSURE LOW STAGE 2

6 : 13.8kV BUS EARTH SWITCH
OPEN & S701 OPEN

* REMARK

O : OPEN STATE

C : CLOSED STATE

- : INDEPENDENT CONDITION

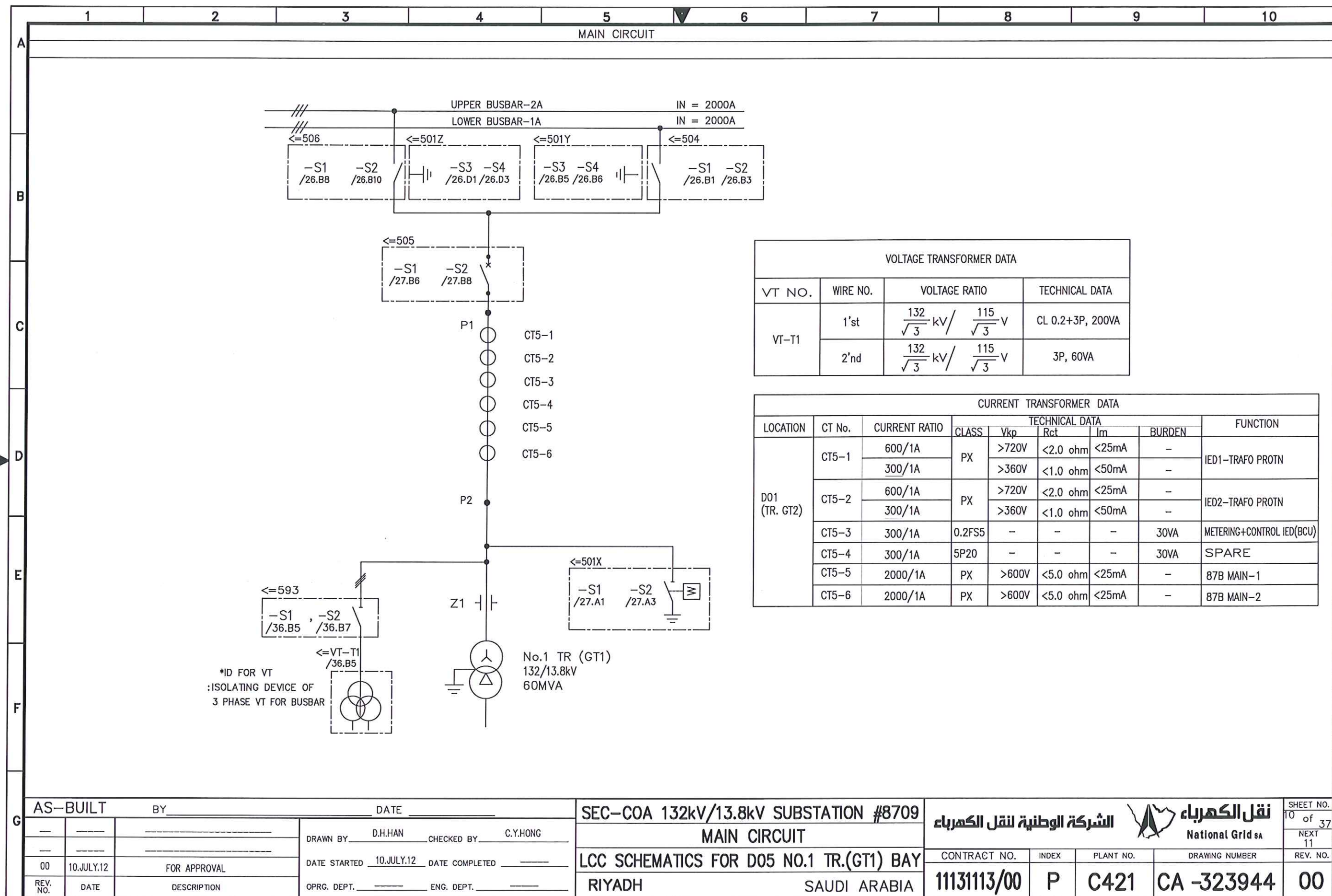
C+S : CONTROL AND SIGNALLING

S : SIGNALLING ONLY

FO : FULLY OPEN

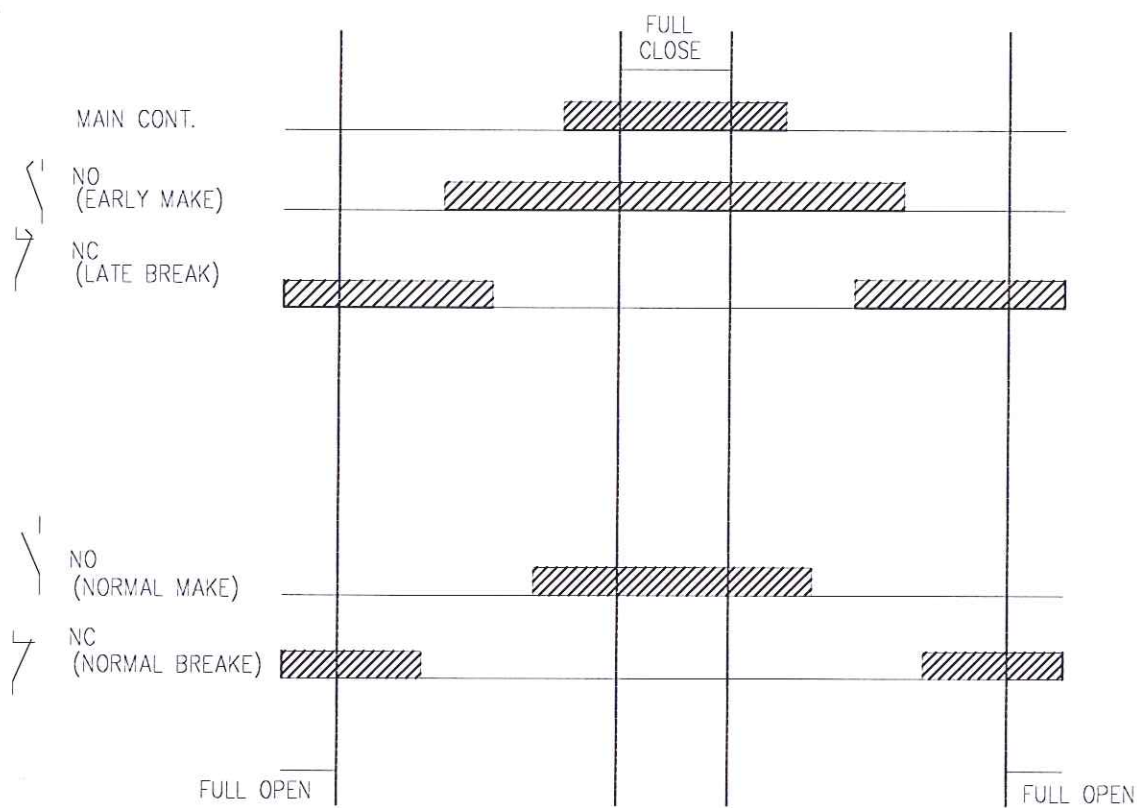
FC : FULLY CLOSE

AS-BUILT			DATE		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 09 of 37	
DRAWN BY D.H.HAN			CHECKED BY C.Y.HONG		INTERLOCK DIAGRAM		CONTRACT NO. 11131113/00		INDEX P		NEXT 10	
DATE STARTED 10.JULY.12			DATE COMPLETED		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		PLANT NO. C421		DRAWING NUMBER CA -323944		REV. NO. 00	
FOR APPROVAL			OPRG. DEPT.		RIYADH SAUDI ARABIA		11131113/00		P		00	
REV. NO.	DATE	DESCRIPTION	ENG. DEPT.									



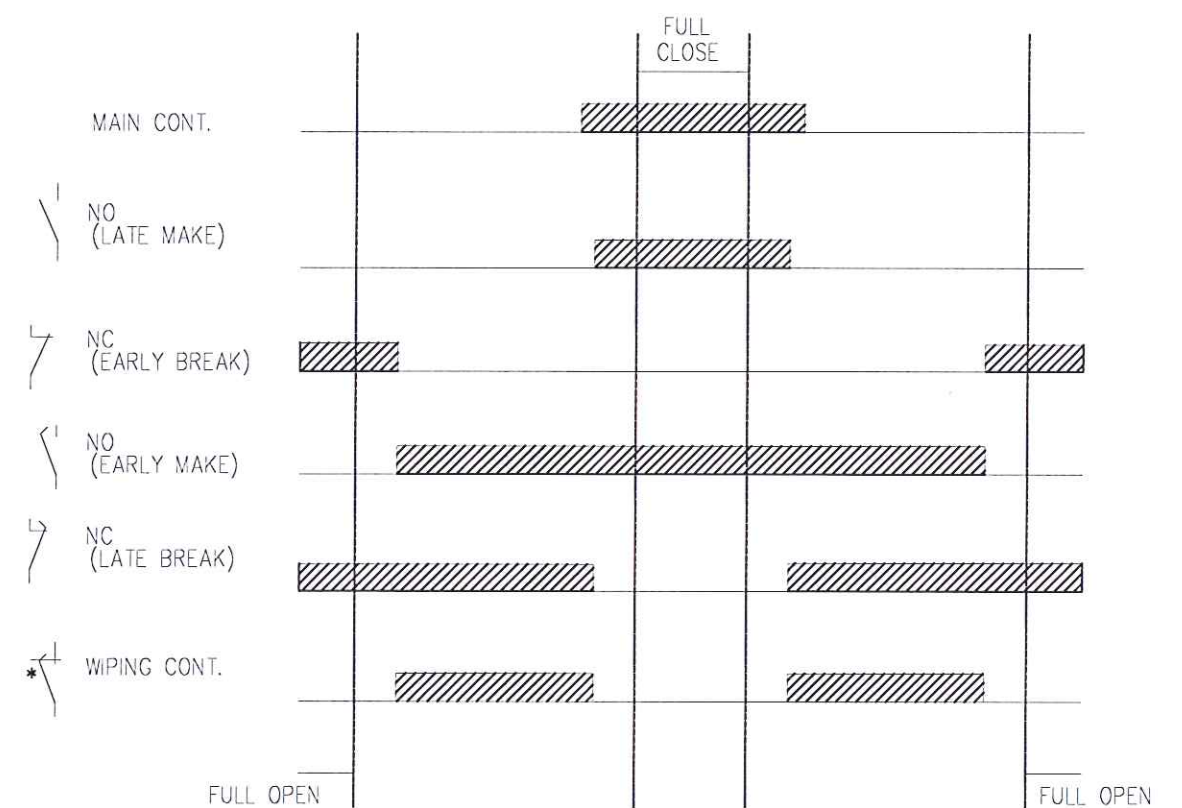
1. SWITCHING DIAGRAM FOR CIRCUIT BREAKER

▨ : CONTACT CLOSED



2. SWITCHING DIAGRAM FOR DS & ES

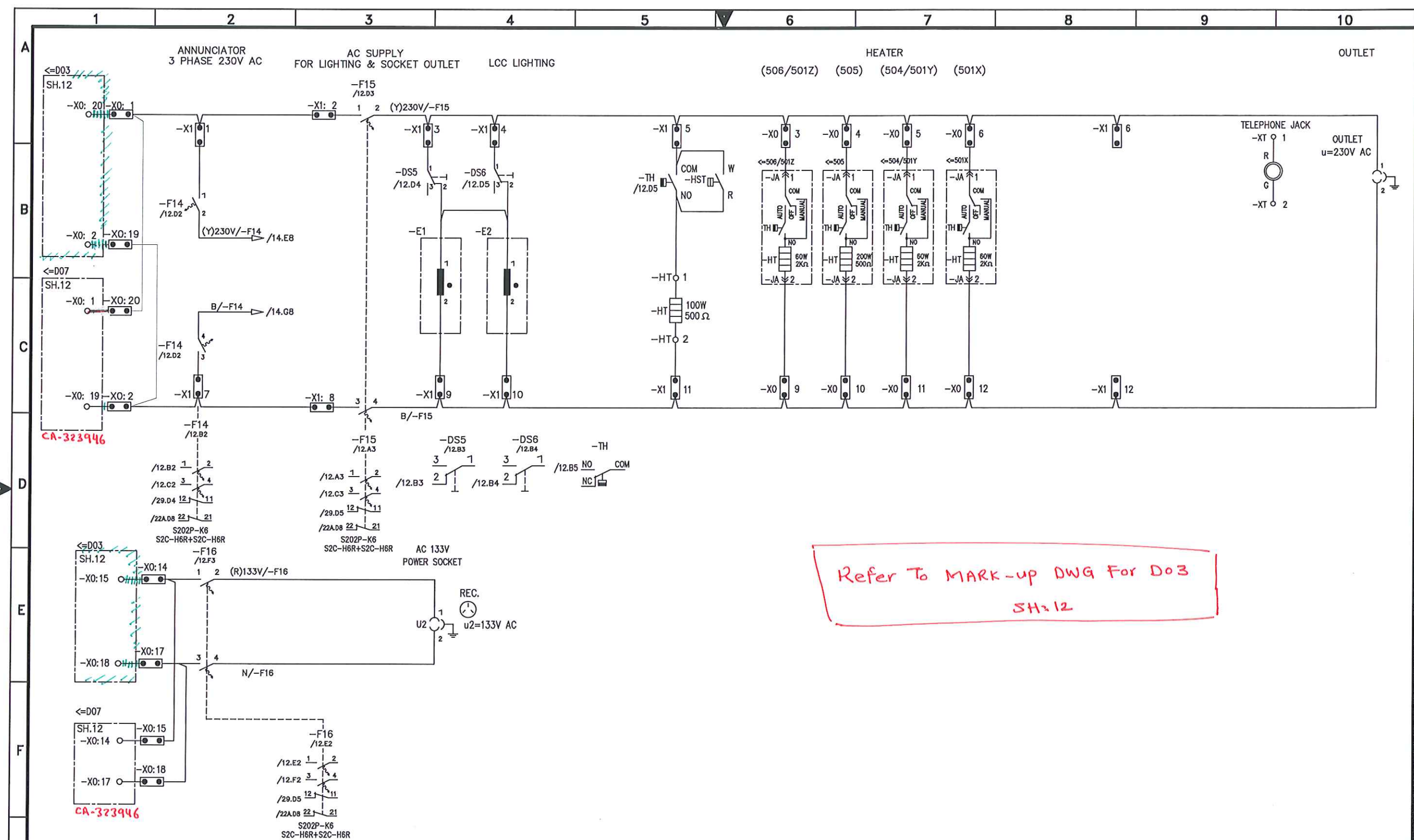
▨ : CONTACT CLOSED



AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	DATE STARTED 10.JULY.12 DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. ENG. DEPT.

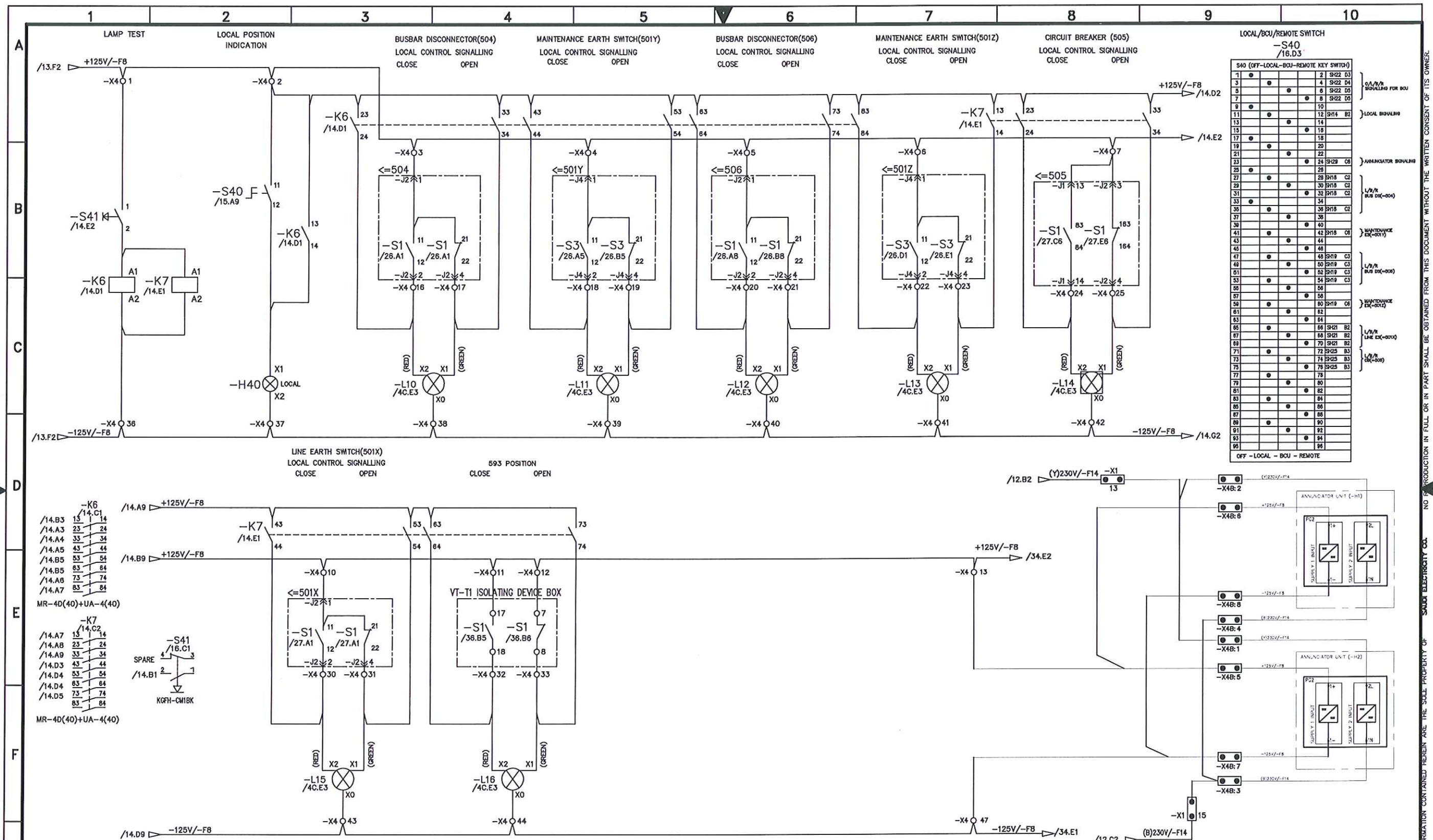
SEC-COA 132kV/13.8kV SUBSTATION #8709
 SWITCHING DIAGRAM
 LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY
 RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء National Grid sa				SHEET NO. 11 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323944	00

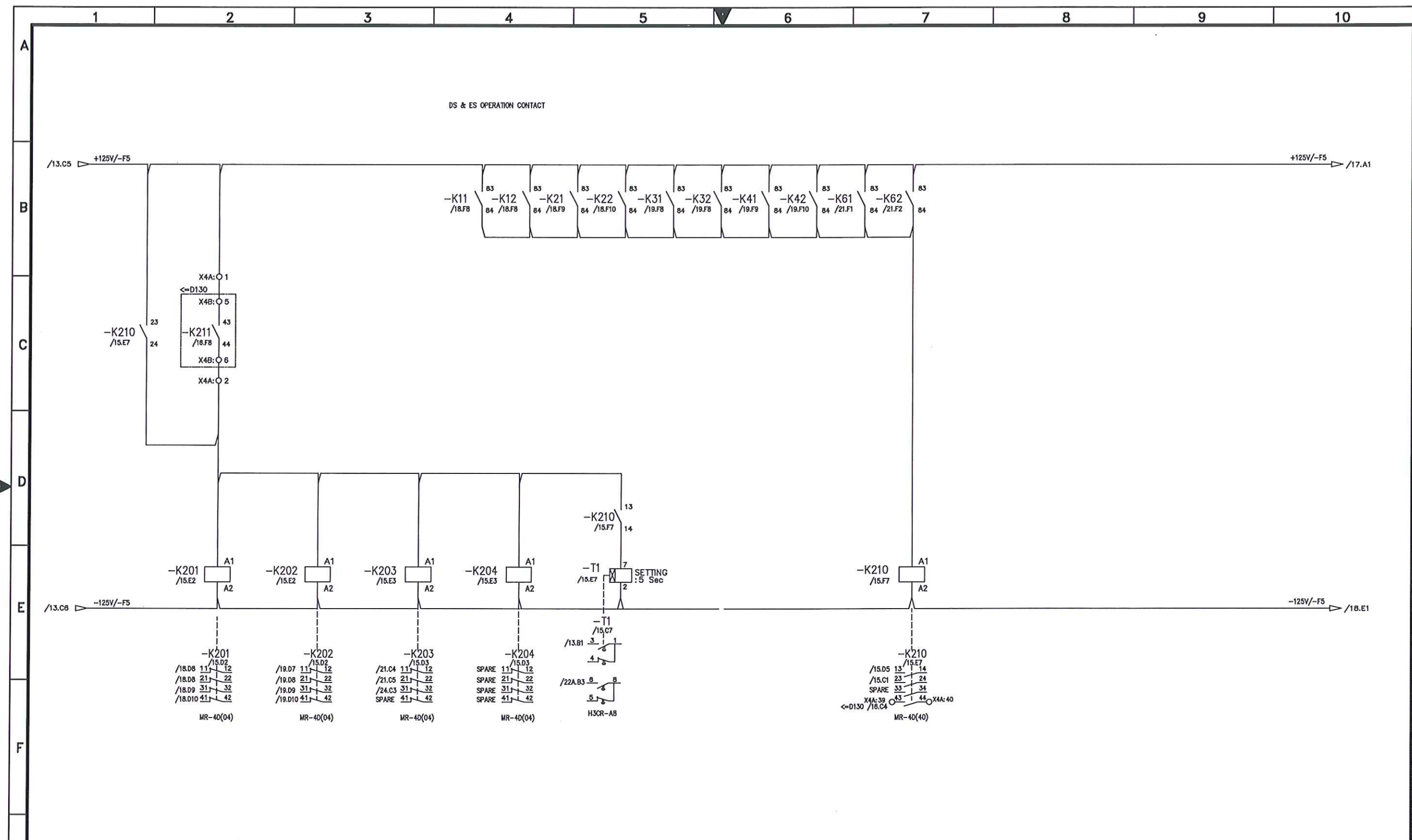


Refer To MARK-up DWG For D03
SH.12

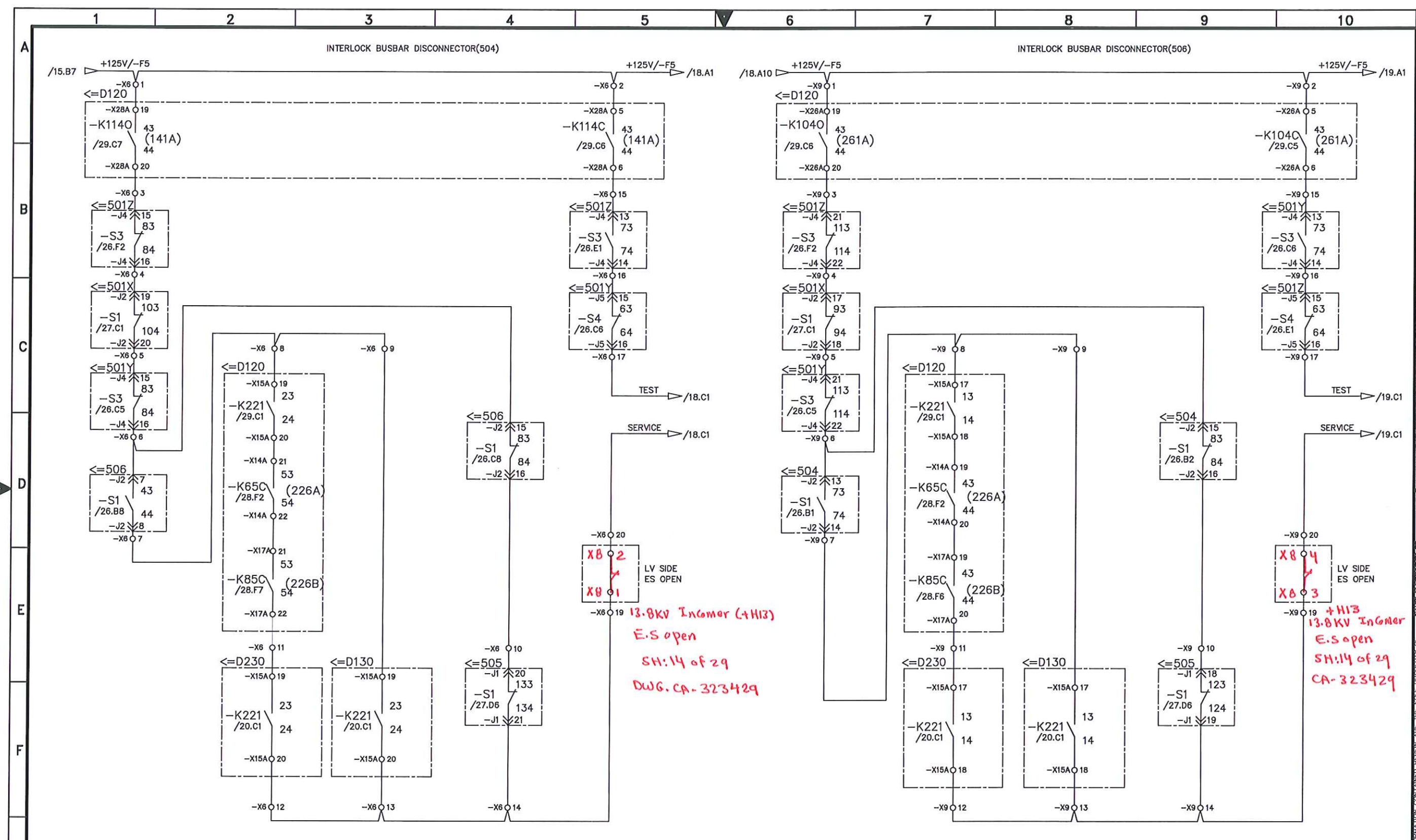
AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 12 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		AC POWER SUPPLY & HEATING/LIGHTING CIRCUIT		National Grid SA				NEXT 13	
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		CONTRACT NO. 11131113/00		INDEX P		REV. NO. 00	
REV. NO. 00			DATE 10.JULY.12		FOR APPROVAL		PLANT NO. C421		DRAWING NUMBER CA-323944			
			DESCRIPTION		OPRG. DEPT. _____ ENG. DEPT. _____		SAUDI ARABIA					



AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 14 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		LOCAL POSITION INDICATOR		National Grid sa		NEXT 15		REV. NO.	
00			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
REV. NO.			DATE		DESCRIPTION		DRAWING NUMBER CA-323944		00		REV. NO.	



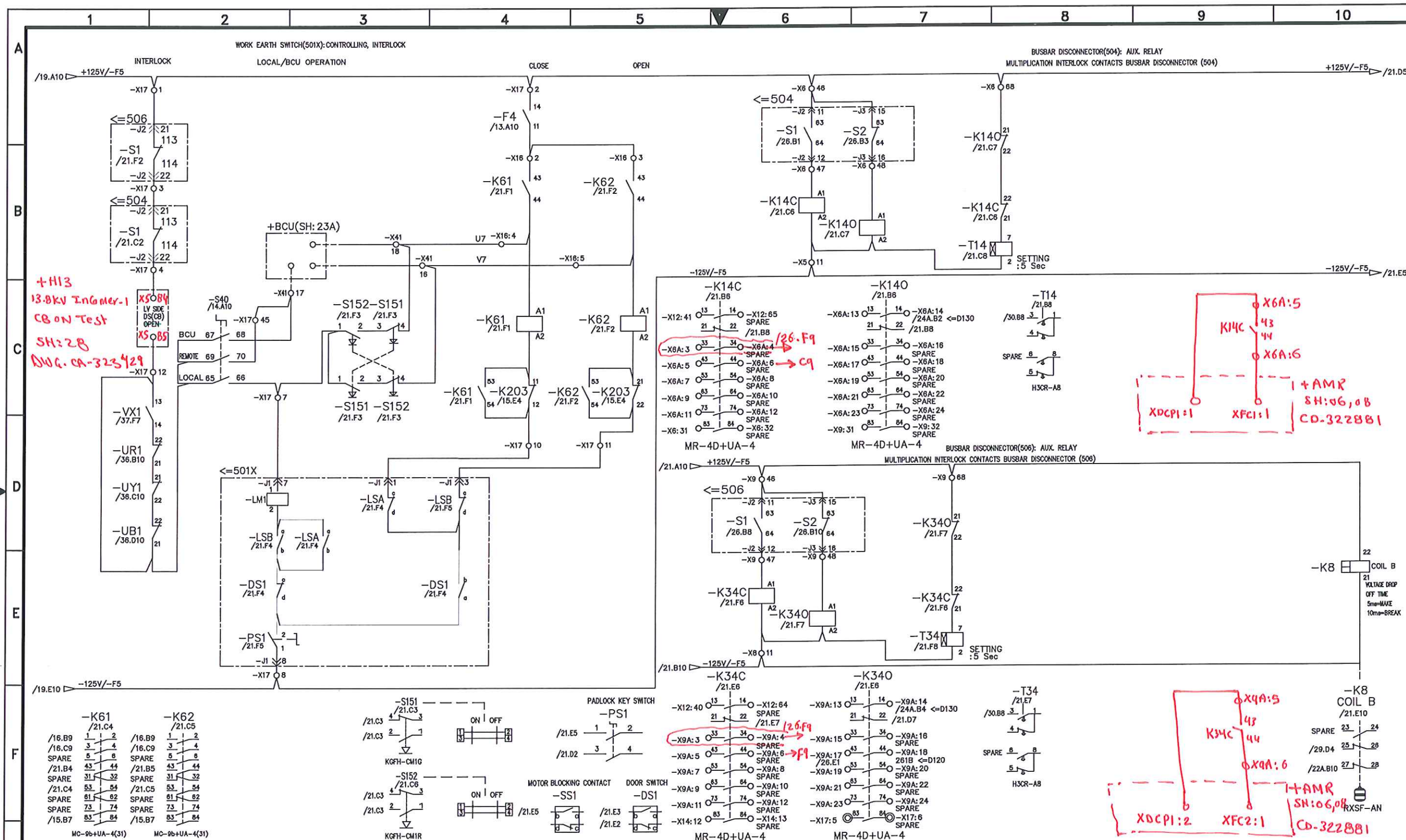
00	10.JULY.12	FOR APPROVAL	DRAWN BY D.H.HAN CHECKED BY C.Y.HONG	SEC-COA 132kV/13.8kV SUBSTATION #8709	الشركة الوطنية لنقل الكهرباء	11131113/00	P	C421	CA -323944	00
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. _____ ENG. DEPT. _____	OPERATION INTERLOCK	National Grid sa	CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
				LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY						
				RIYADH SAUDI ARABIA						



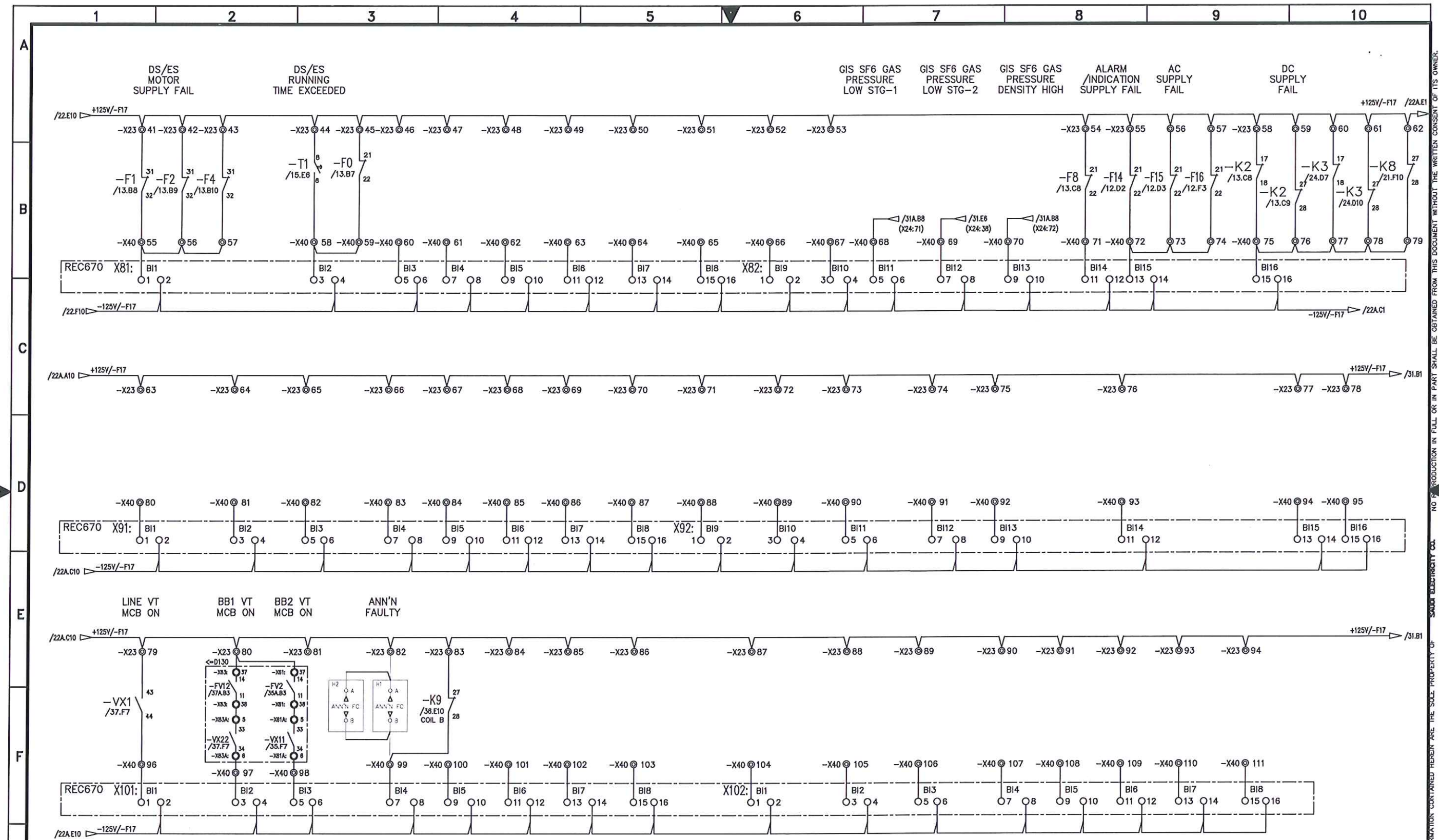
13.8KV Incomer (+H13)
E.S open
SH:14 of 29
DWG. CA-323429


13.8KV Incomer (+H13)
E.S open
SH:14 of 29
CA-323429

AS-BUILT			BY _____ DATE _____			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 17 of 37		
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG			INTERLOCK OF BUSBAR DISCONNECTOR(504/506)			National Grid sa			NEXT 18		
			DATE STARTED 10.JULY.12 DATE COMPLETED _____			LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			CONTRACT NO. 11131113/00			REV. NO. 00		
			OPRG. DEPT. _____ ENG. DEPT. _____			RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA-323944		
REV. NO.			DATE			DESCRIPTION			PLANT NO. C421			SEC-D (2004/10)		
									EDMS VECTOR			SECE00		



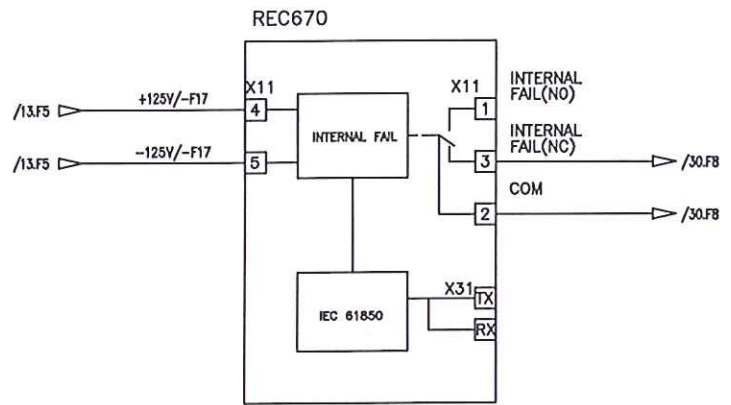
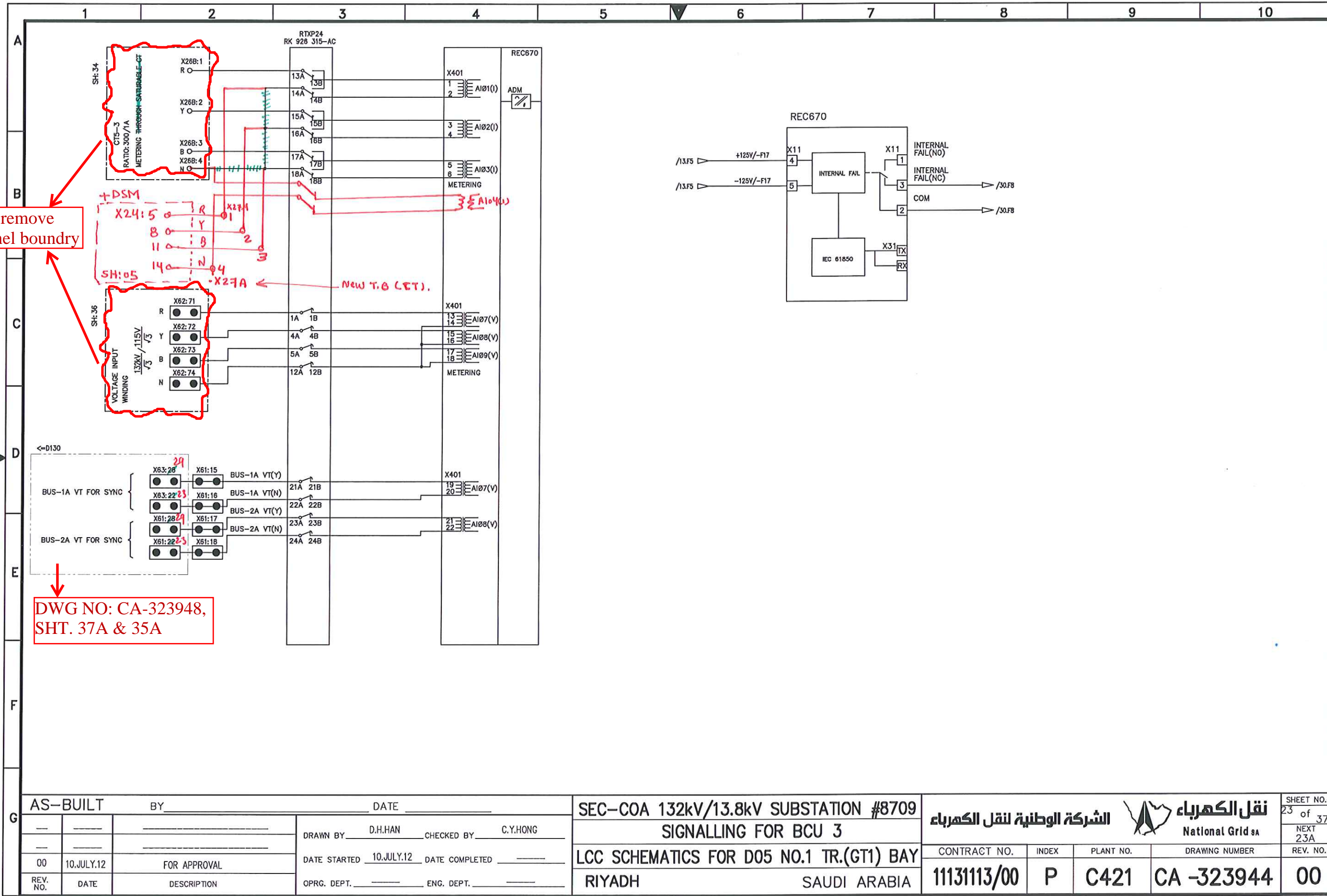
AS-BUILT			BY _____ DATE _____			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 21 of 37		
DRAWN BY D.H.HAN CHECKED BY C.Y.HONG			DATE STARTED 10.JULY.12 DATE COMPLETED _____			LINE ES(501X):CONTROLLING/BUSBAR DS(504/506): AUX. RELAY			National Grid sa			NEXT 22		
DATE 10.JULY.12 FOR APPROVAL			OPRG. DEPT. _____ ENG. DEPT. _____			LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			CONTRACT NO. 11131113/00			REV. NO. 00		
REV. NO. _____			DESCRIPTION _____			RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA -323944		



G	AS-BUILT			BY _____	DATE _____	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء			نقل الكهرباء		SHEET NO.
	_____	_____	_____	DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	SIGNALLING FOR BCU 2					National Grid sa		22A of 37
	_____	_____	_____	DATE STARTED 10.JULY.12	DATE COMPLETED _____	LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	NEXT	
	00	10.JULY.12	FOR APPROVAL	OPRG. DEPT. _____	ENG. DEPT. _____	RIYADH SAUDI ARABIA		11131113/00	P	C421	CA -323944	23	
	REV. NO.	DATE	DESCRIPTION									REV. NO.	

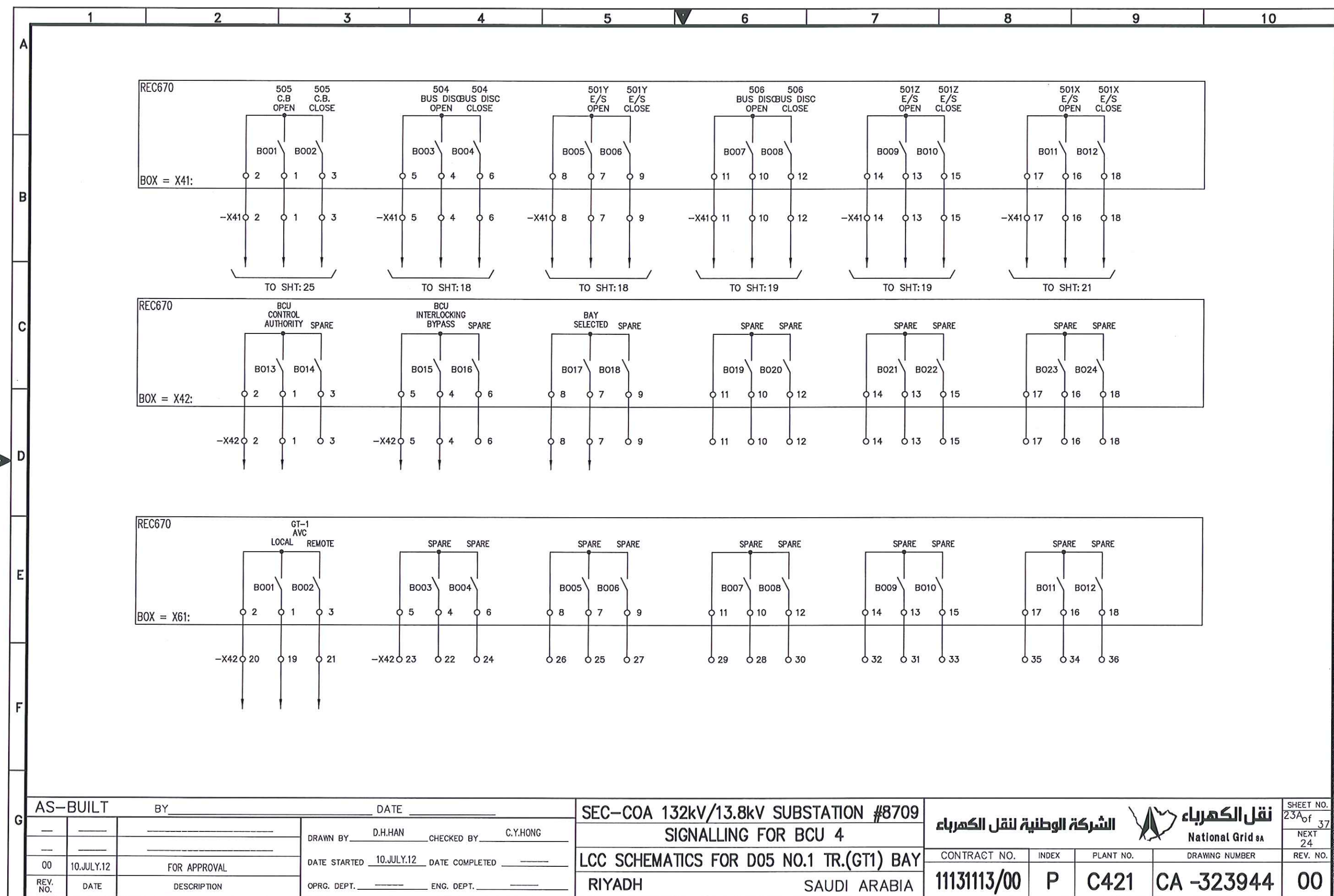
Please remove
the panel boundary

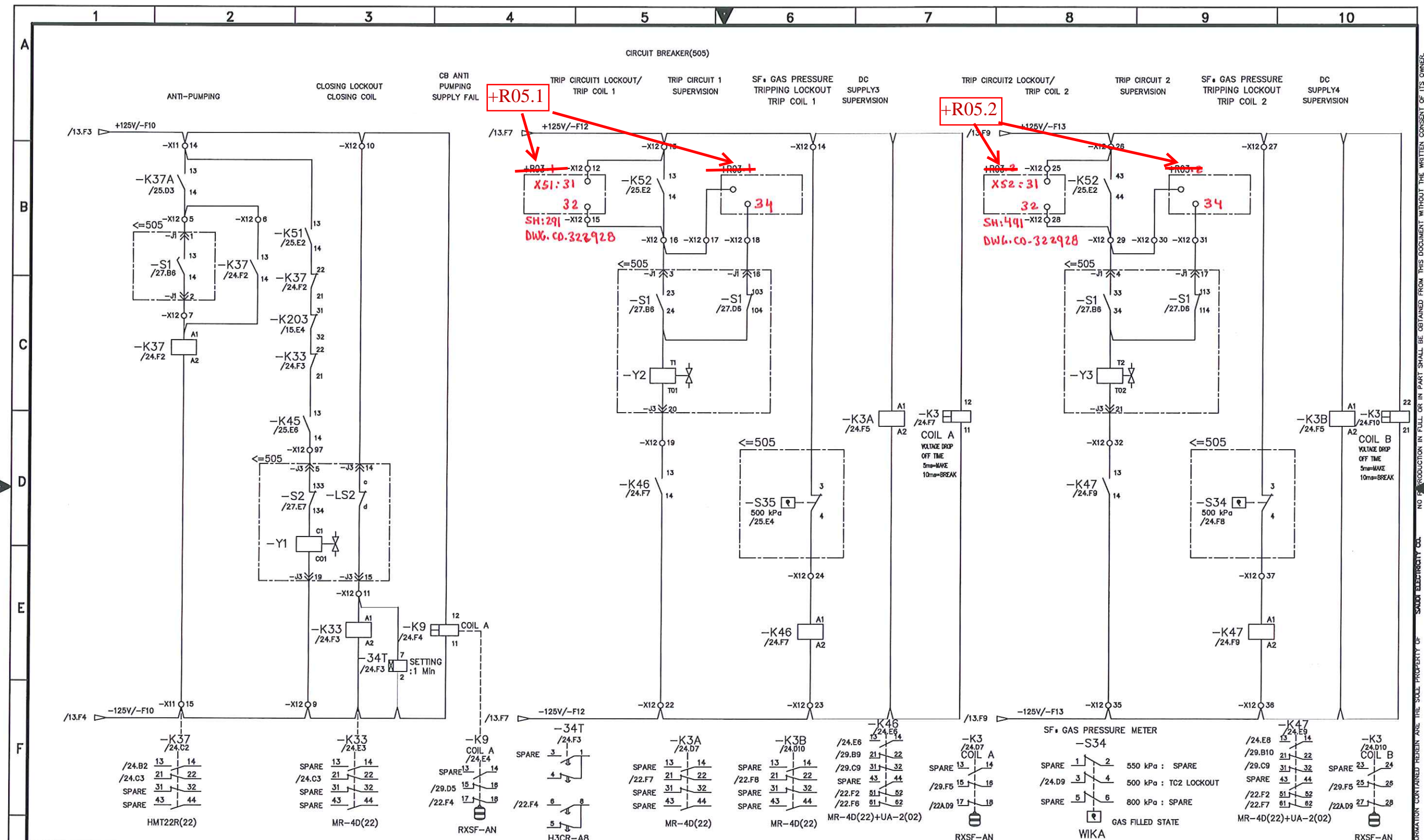
DWG NO: CA-323948,
SHT. 37A & 35A



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AS-BUILT			BY _____ DATE _____			SEC-COA 132kV/13.8kV SUBSTATION #8709			شركة الوطنية لنقل الكهرباء			SHEET NO. 23 of 37		
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG			SIGNALLING FOR BCU 3			National Grid sa			NEXT 23A		
00			DATE STARTED 10.JULY.12 DATE COMPLETED _____			LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			CONTRACT NO. 11131113/00			REV. NO. 00		
REV. NO.			DATE			RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA-323944		
			DESCRIPTION						PLANT NO. C421					
			OPRG. DEPT. _____ ENG. DEPT. _____											



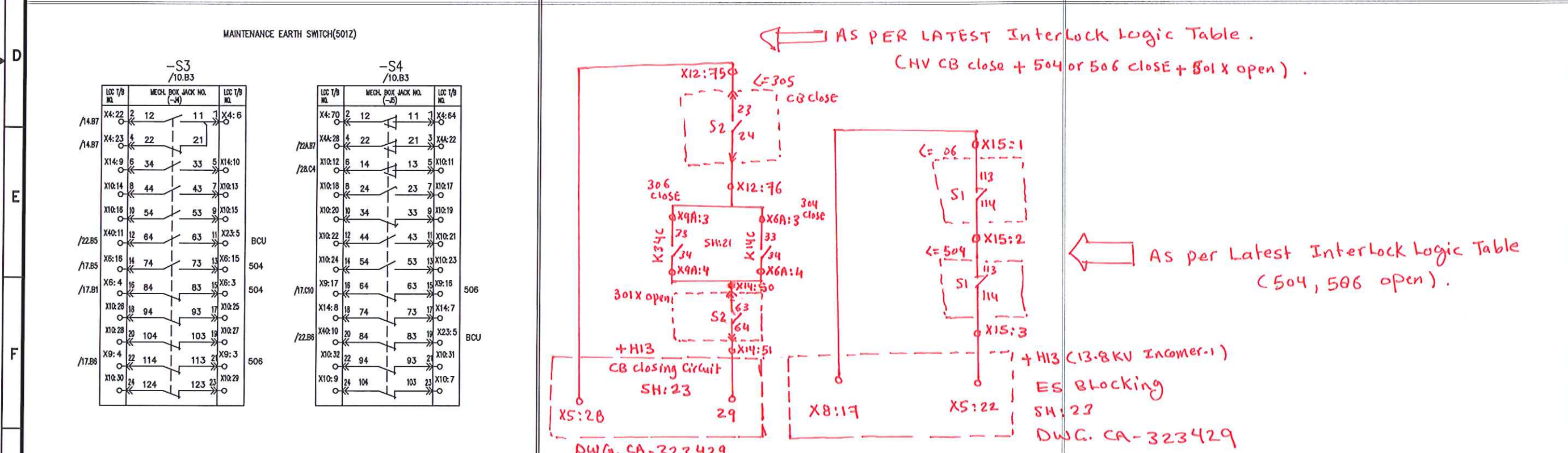
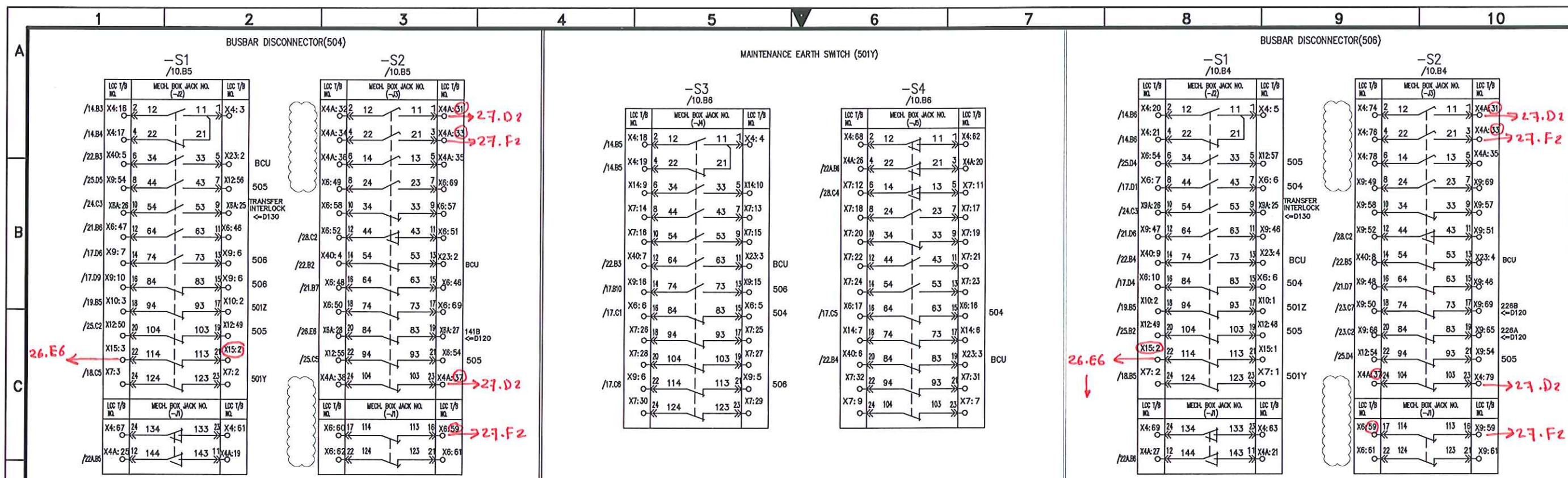


AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT.

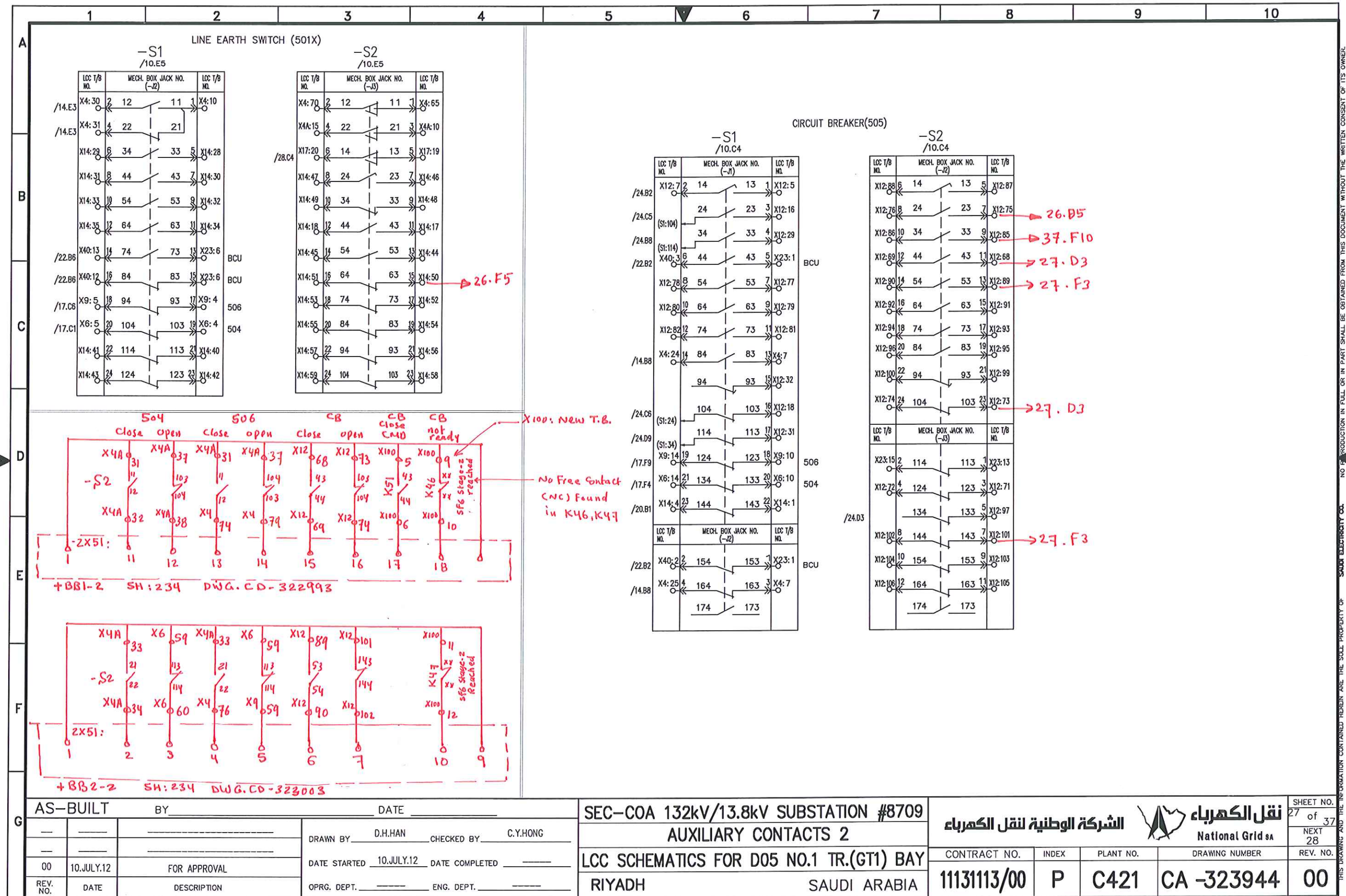
DRAWN BY D.H.HAN CHECKED BY C.Y.HONG
 DATE STARTED 10.JULY.12 DATE COMPLETED
 OPRG. DEPT. ENG. DEPT.

SEC-COA 132kV/13.8kV SUBSTATION #8709
CB ANTI-PUMPING/CLOSE/TRIP CIRCUIT
LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO.
		National Grid sa		24 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323944	00



AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 26 of 37
		DRAWN BY D.H.HAN	CHECKED BY C.Y.HONG	AUXILIARY CONTACTS 1						NEXT 27
		DATE STARTED 10.JULY.12	DATE COMPLETED	LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		CONTRACT NO. 11131113/00		INDEX P	PLANT NO. C421	REVISION NO. 00
		OPRG. DEPT.	ENG. DEPT.	RIYADH SAUDI ARABIA		DRAWING NUMBER CA-323944				
REV. NO.	DATE	DESCRIPTION								



1 2 3 4 5 6 7 8 9 10

A

B

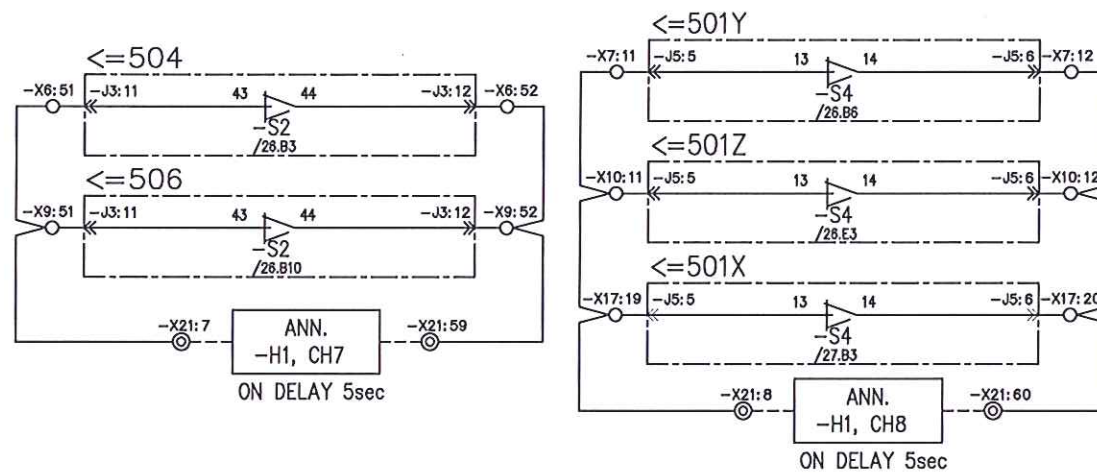
C

D

E

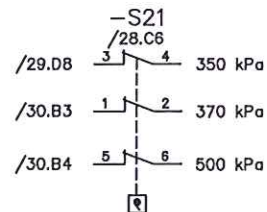
F

DS/ES SWITCHING INCOMPLETE

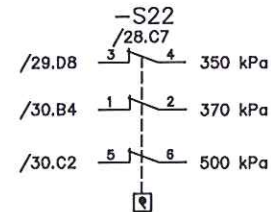


GAS PRESSURE METERING

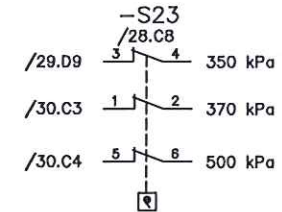
GAS PRESSURE METERING
COMPARTMENT G05-1
506+501Z



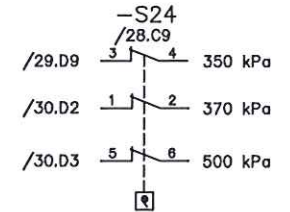
GAS PRESSURE METERING
COMPARTMENT G05-2
504+501Y



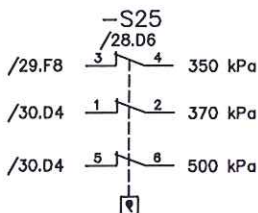
GAS PRESSURE METERING
COMPARTMENT G05-3
CT



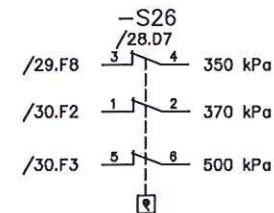
GAS PRESSURE METERING
COMPARTMENT G05-4
501X



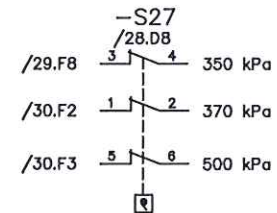
GAS PRESSURE METERING
COMPARTMENT G05-5
VT-T1



GAS PRESSURE METERING
COMPARTMENT G05-6
CABLE HEAD BOX(-Z2)



GAS PRESSURE METERING
COMPARTMENT G05-7
CABLE HEAD BOX(-Z2)



* REMARK *

FOR S21~S28, THE RELATED FUNCTIONS OF AUX. CONTACTS ARE AS FOLLOW.

1-2 : SF6 PRESSURE LOW STAGE 1

3-4 : SF6 PRESSURE LOW STAGE 2

5-6 : SF6 DENSITY HIGH

□ : GAS FILLED STATE

AS-BUILT

BY

DATE

DRAWN BY D.H.HAN CHECKED BY C.Y.HONG

DATE STARTED 10.JULY.12 DATE COMPLETED

OPRG. DEPT. ENG. DEPT.

SEC-COA 132kV/13.8kV SUBSTATION #8709

DS/ES SWITCHING INCOMPLETE & GAS PRESSURE METERING

LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

National Grid sa

CONTRACT NO.

INDEX

PLANT NO.

DRAWING NUMBER

11131113/00

P

C421

CA -323944

SHEET NO.

28 of 37

NEXT 29

REV. NO.

00

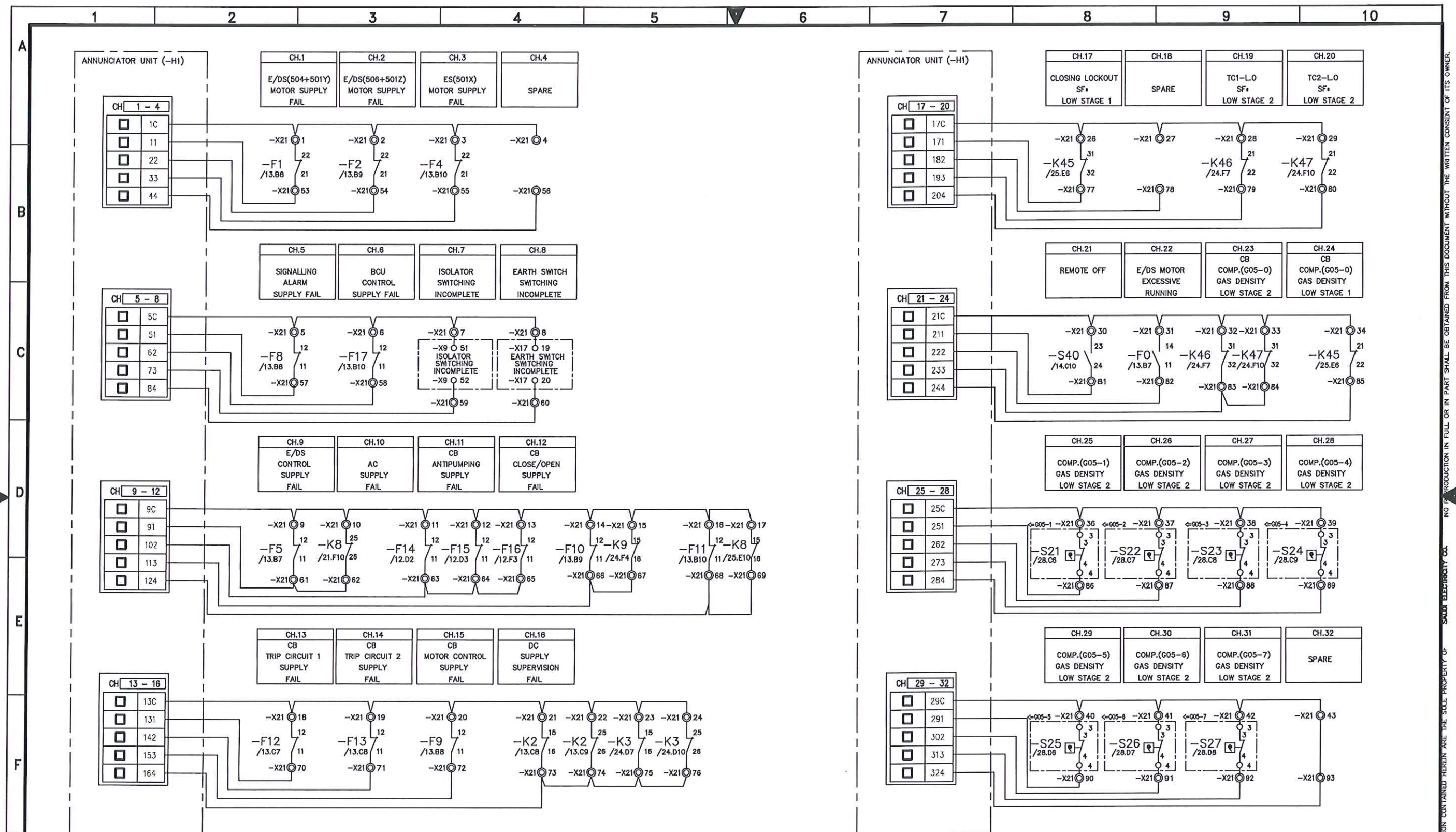
SEC-D (2004/10)

EDMS

VECTOR

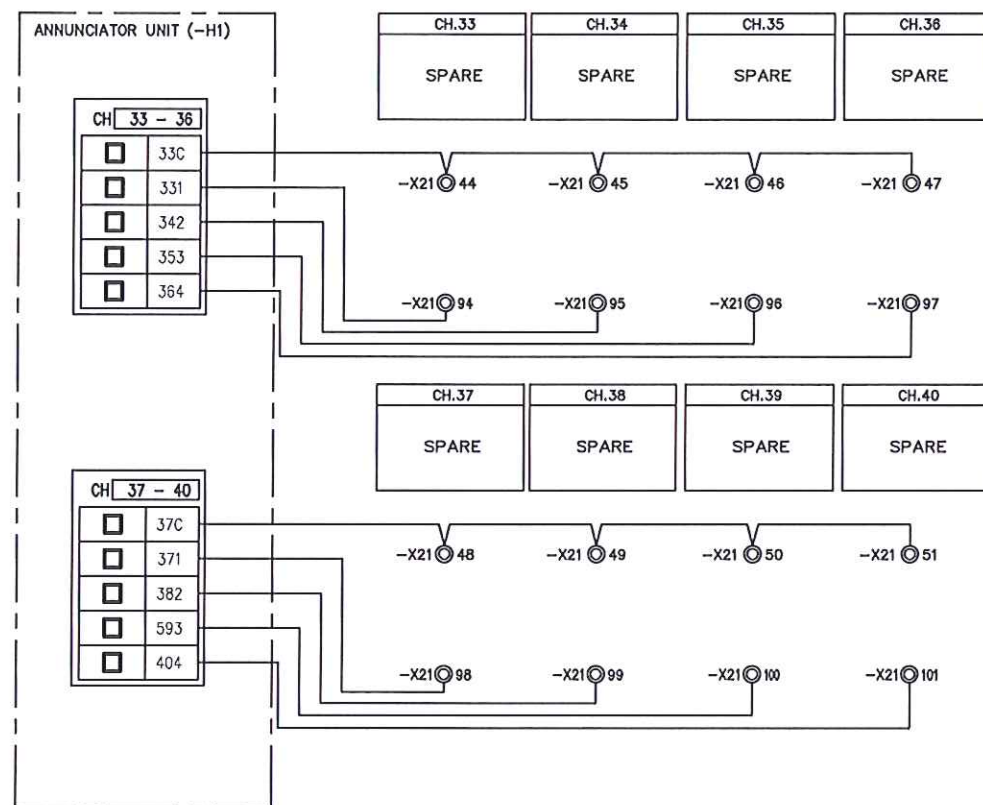
SECE00

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AS-BUILT			BY _____ DATE _____		SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		SHEET NO. 29 of 37	
			DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		SIGNALLING : INPUT ANNUNCIATOR 1		National Grid sa		NEXT 29A		REV. NO.	
00			10.JULY.12		FOR APPROVAL		CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421	
REV. NO.			DATE		DESCRIPTION		DRAWING NUMBER CA -323944		DRAWING NUMBER		00	
			DATE STARTED 10.JULY.12 DATE COMPLETED _____		LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		SAUDI ARABIA		SEC-D (2004/10)		EDMS VECTOR SECE00	
			OPRG. DEPT. _____ ENG. DEPT. _____		RIYADH							

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AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

DRAWN BY D.H.HAN CHECKED BY C.Y.HONG

DATE STARTED 10.JULY.12 DATE COMPLETED

OPRG. DEPT. ENG. DEPT.

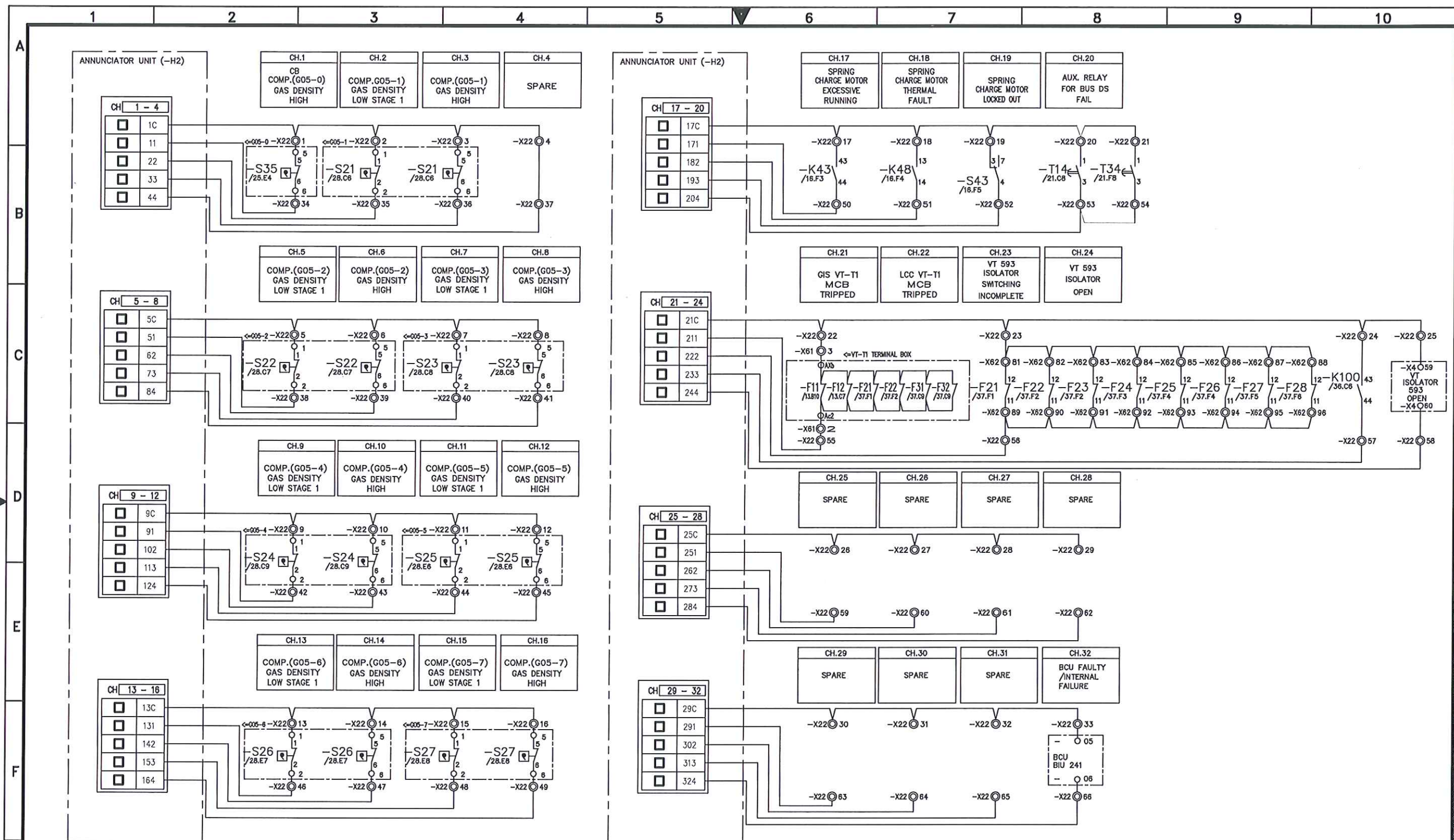
SEC-COA 132kV/13.8kV SUBSTATION #8709

SIGNALLING : INPUT ANNUNCIATOR 1

LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY

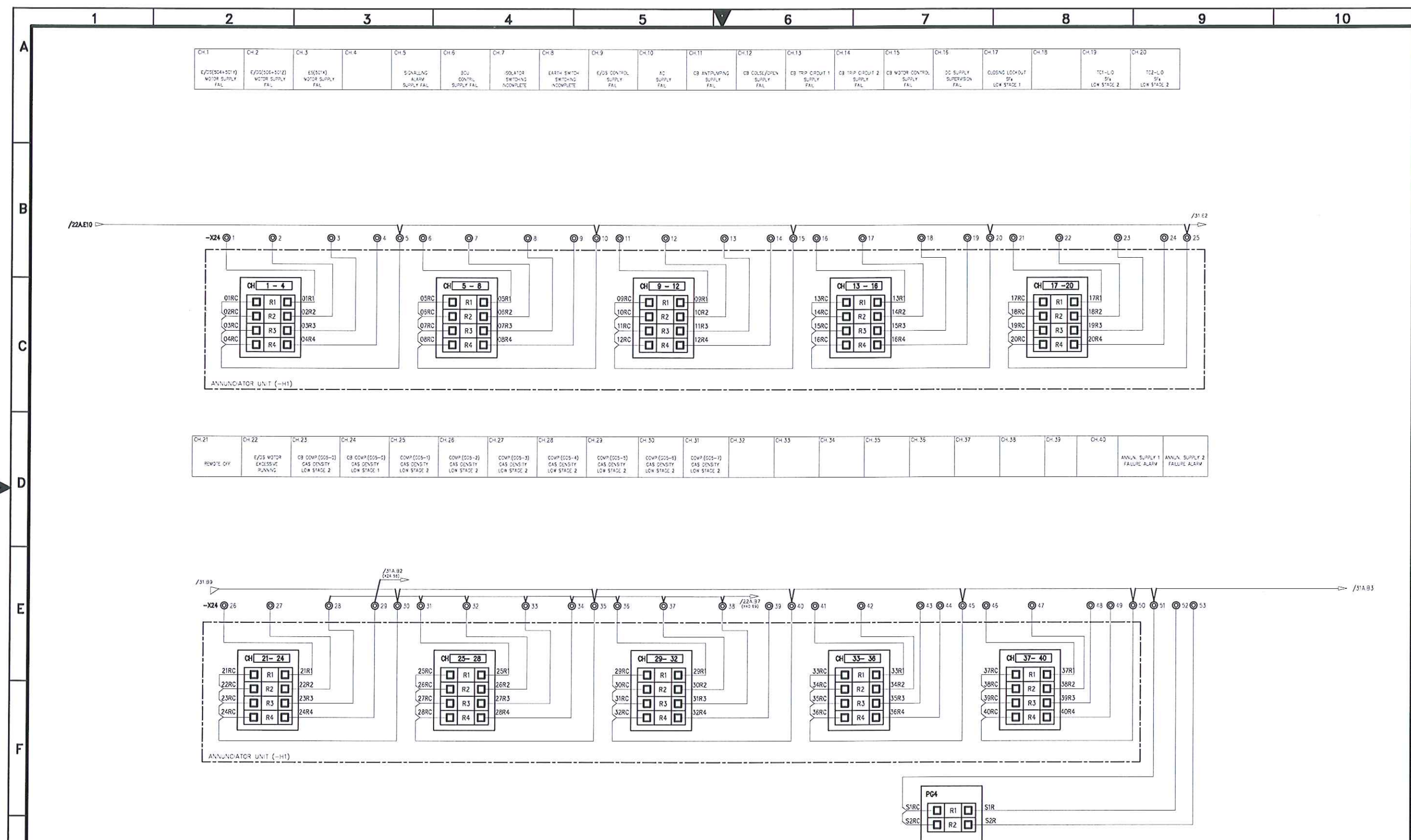
RIYADH SAUDI ARABIA


الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid SA	
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
11131113/00	P	C421	CA -323944	29A of 37	00

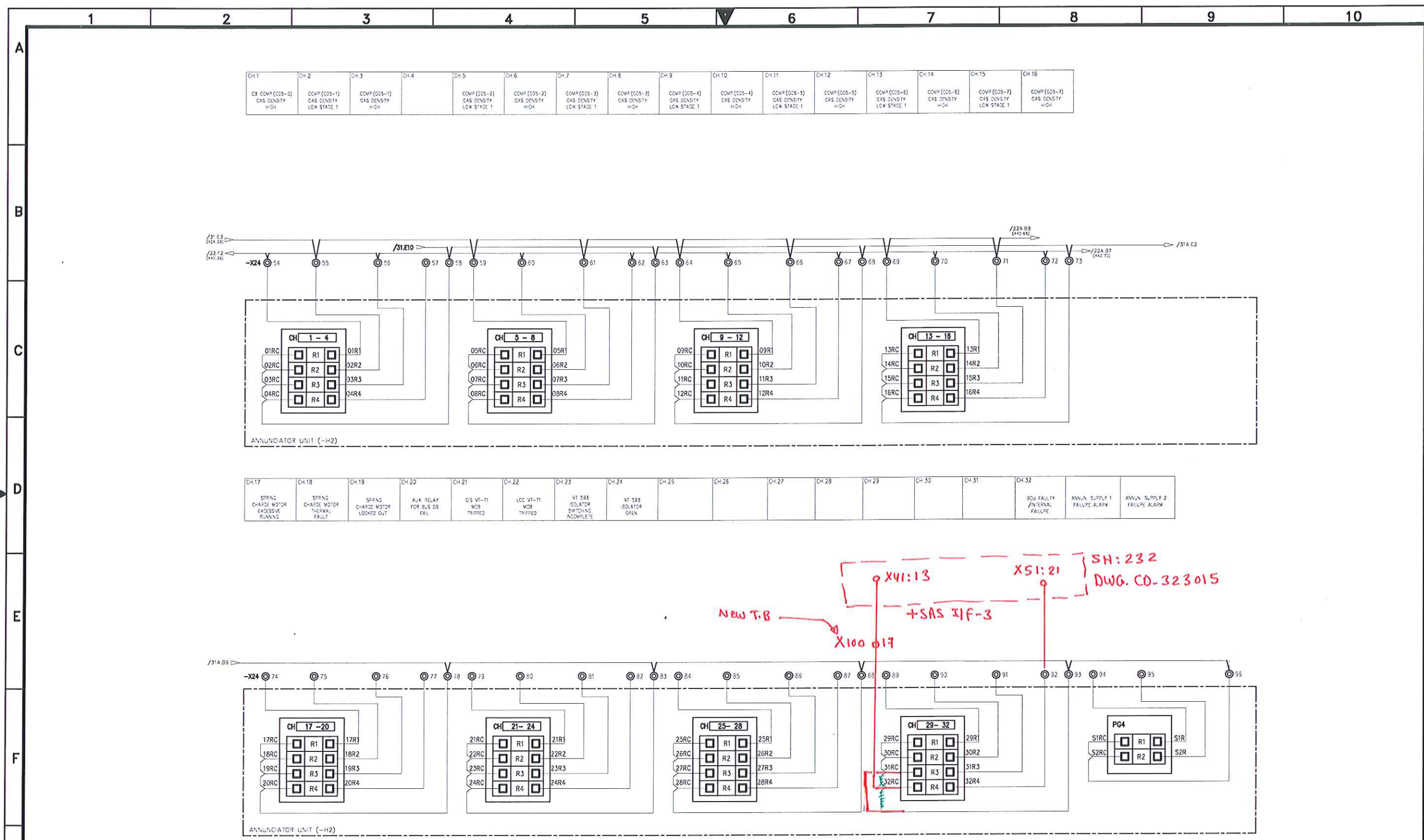


AS-BUILT		BY	DATE	SEC-COA 132kV/13.8kV SUBSTATION #8709		الشركة الوطنية لنقل الكهرباء		SHEET NO. 30 of 37	
				DRAWN BY D.H.HAN CHECKED BY C.Y.HONG		National Grid SA		NEXT 31	
				DATE STARTED 10.JULY.12 DATE COMPLETED		CONTRACT NO. 11131113/00		REV. NO. 00	
				OPRG. DEPT. ENG. DEPT.		INDEX P		DRAWING NUMBER CA-323944	
00		10.JULY.12	FOR APPROVAL	LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY		PLANT NO. C421		REV. NO. 00	
REV. NO.		DATE	DESCRIPTION	RIYADH SAUDI ARABIA		DRAWING NUMBER CA-323944		REV. NO. 00	

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G	AS-BUILT			BY	DATE		SEC-COA 132kV/13.8kV SUBSTATION #8709				نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid SA						SHEET NO.					
						DRAWN BY D.H.HAN CHECKED BY C.Y.HONG				31 of 37												
						DATE STARTED 10.JULY.12 DATE COMPLETED				SIGNALLING : OUTPUT ANNUNCIATOR 1				NEXT								
						OPRG. DEPT. ENG. DEPT.				LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY				31A								
00			10.JULY.12		FOR APPROVAL						CONTRACT NO.				INDEX		PLANT NO.		DRAWING NUMBER		REV. NO.	
REV. No.			DATE		DESCRIPTION						11131113/00				P		C421		CA -323944		00	



AS-BUILT

BY _____ DATE _____

—

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—

—

—

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00

10.JULY.12

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY D.H.HAN

CHECKED BY C.Y.HONG

DATE STARTED 10.JULY.12

DATE COMPLETED _____

OPRG. DEPT. _____

ENG. DEPT. _____

SEC-COA 132kV/13.8kV SUBSTATION #8709

SIGNALLING : OUTPUT ANNUNCIATOR 2

LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid SA

CONTRACT NO.

INDEX

PLANT NO.

DRAWING NUMBER

REV. NO.

11131113/00

P

C421

CA -323944

00

SHEET NO.

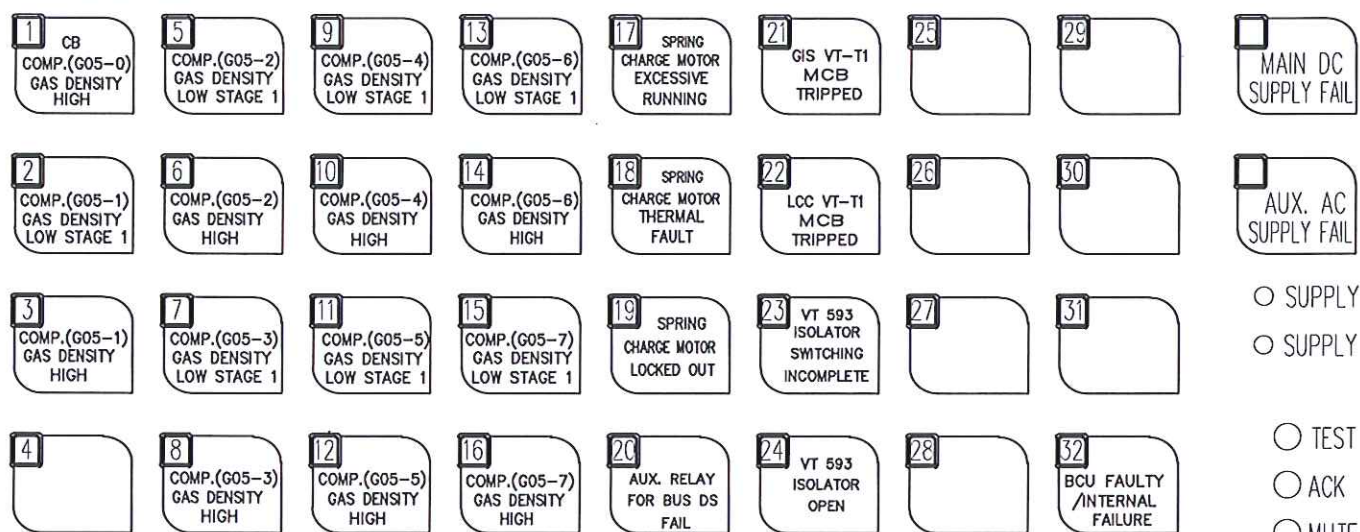
31A of 37

NEXT 32

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-H2

RTK



UC625

CH.NO. DELAY (SEC.) LED COLOR			CH.NO. DELAY (SEC.) LED COLOR		
1	5S	YELLOW	17	5mS	YELLOW
2	5S	YELLOW	18	5mS	YELLOW
3	5S	YELLOW	19	5mS	YELLOW
4	5mS	YELLOW	20	5mS	YELLOW
5	5S	YELLOW	21	5mS	YELLOW
6	5S	YELLOW	22	5mS	YELLOW
7	5S	YELLOW	23	5S	YELLOW
8	5S	YELLOW	24	5mS	YELLOW
9	5S	YELLOW	25	5mS	YELLOW
10	5S	YELLOW	26	5mS	YELLOW
11	5S	YELLOW	27	5mS	YELLOW
12	5S	YELLOW	28	5mS	YELLOW
13	5S	YELLOW	29	5mS	YELLOW
14	5S	YELLOW	30	5mS	YELLOW
15	5S	YELLOW	31	5mS	YELLOW
16	5S	YELLOW	32	5mS	YELLOW

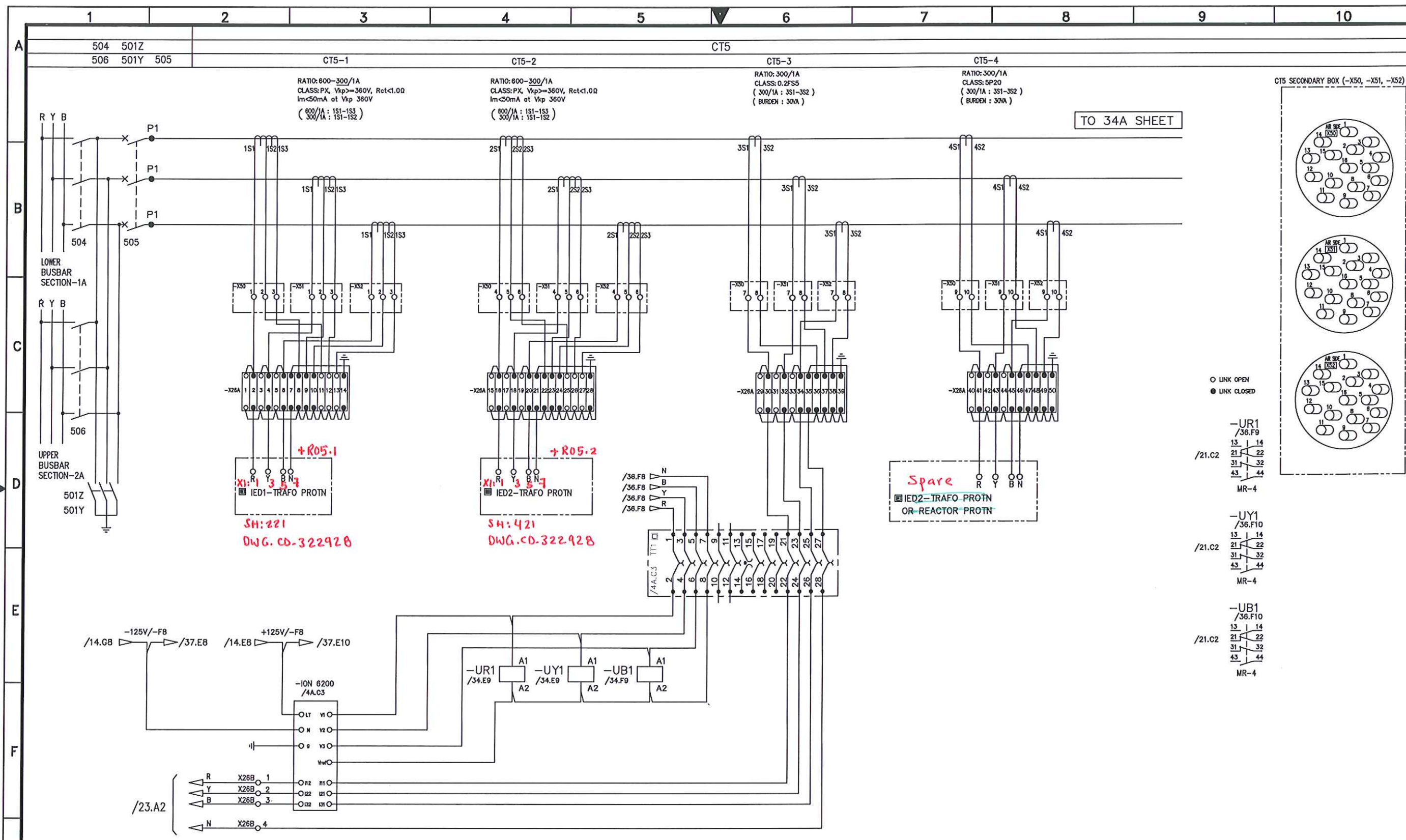
- 1) MAKER : RTK INSTRUMENTS
- 2) MODEL : UC625-32YW-HH-024-R-M3
- 3) SUPPLY VOLTAGE
 - MAIN SUPPLY : DC 125V
 - AUX. SUPPLY : AC 220V
- 4) LED COLOR : YELLOW
- 5) DELAYED TIME
 - CH1~CH3, CH5~CH16, CH23 : 5 SEC.
 - OTHERS : 5 mSEC.

AS-BUILT		BY	DATE
00	10.JULY.12	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	

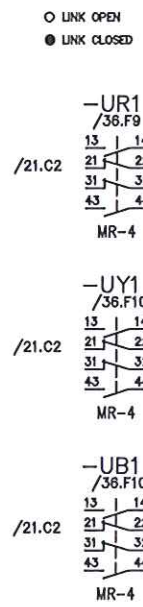
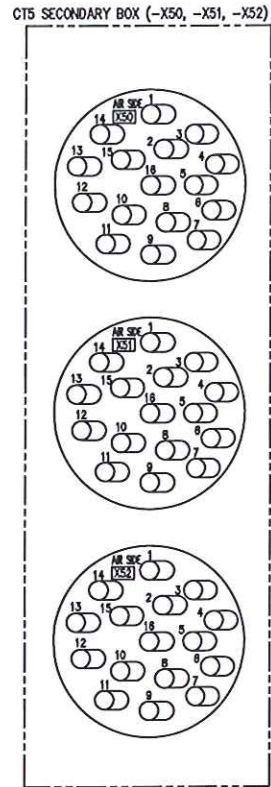
DRAWN BY	D.H.HAN	CHECKED BY	C.Y.HONG
DATE STARTED	10.JULY.12	DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/13.8kV SUBSTATION #8709
SIGNALLING : VIEW/FRONT ANNUNCIATOR 2
LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء		National Grid sa		SHEET NO. 33 of 37
CONTRACT NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
11131113/00	P	C421	CA -323944	00



TO 34A SHEET



Spare
IED2-TRAF0 PROTn
OR-REACTOR PROTn

AS-BUILT			BY _____ DATE _____			SEC-COA 132kV/13.8kV SUBSTATION #8709			الشركة الوطنية لنقل الكهرباء			SHEET NO. 34 of 37	
						SHORT CIRCUIT AND DISCONNECTING CT'S(CT5) & CT SECONDARY BOX TERMINAL/LABELLING			National Grid sa			NEXT 34A	
						LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY			CONTRACT NO. 11131113/00			REV. NO. 00	
						RIYADH SAUDI ARABIA			INDEX P			DRAWING NUMBER CA -323944	
									PLANT NO. C421				

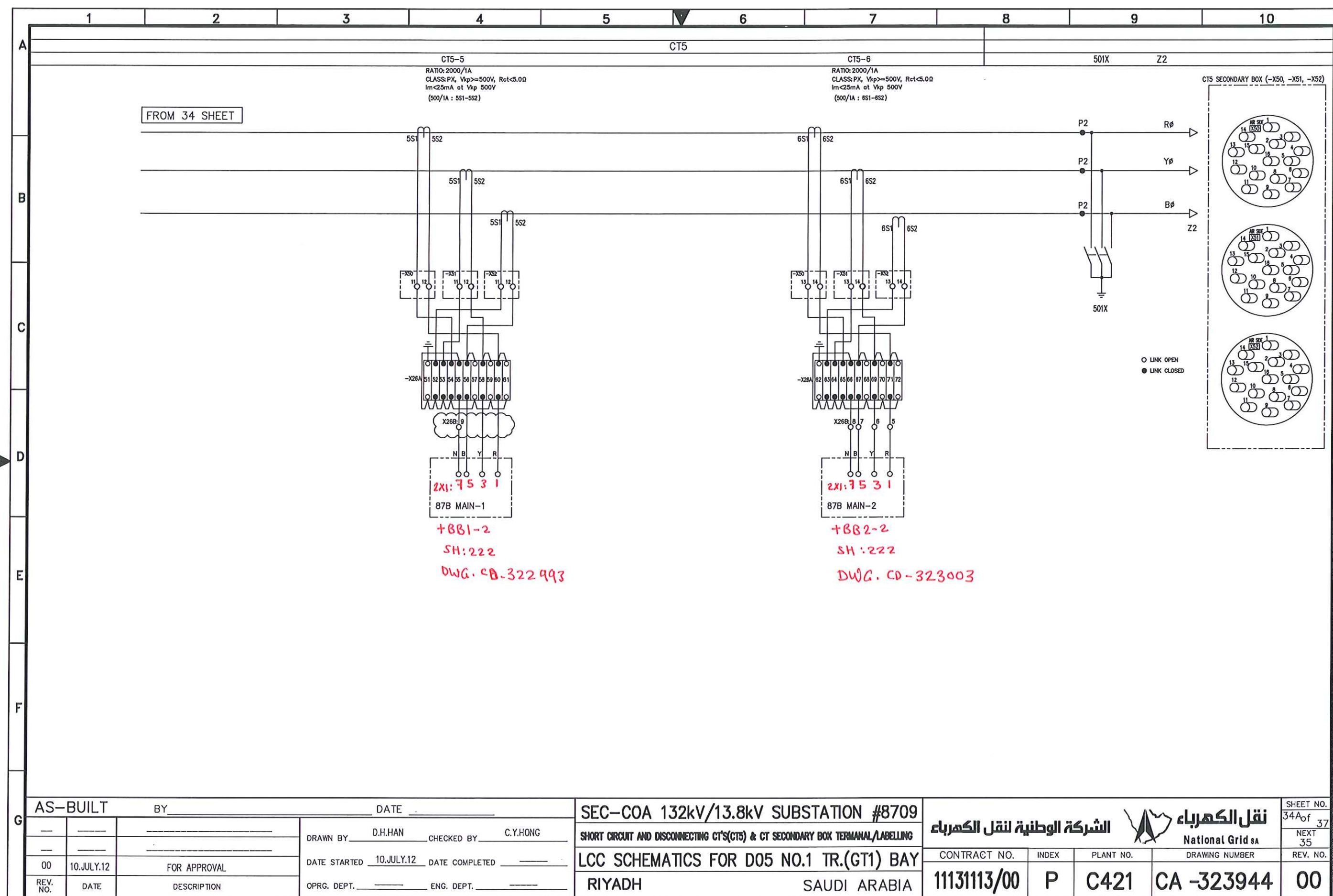
REV. NO.			DATE			DESCRIPTION		
00			10.JULY.12			FOR APPROVAL		

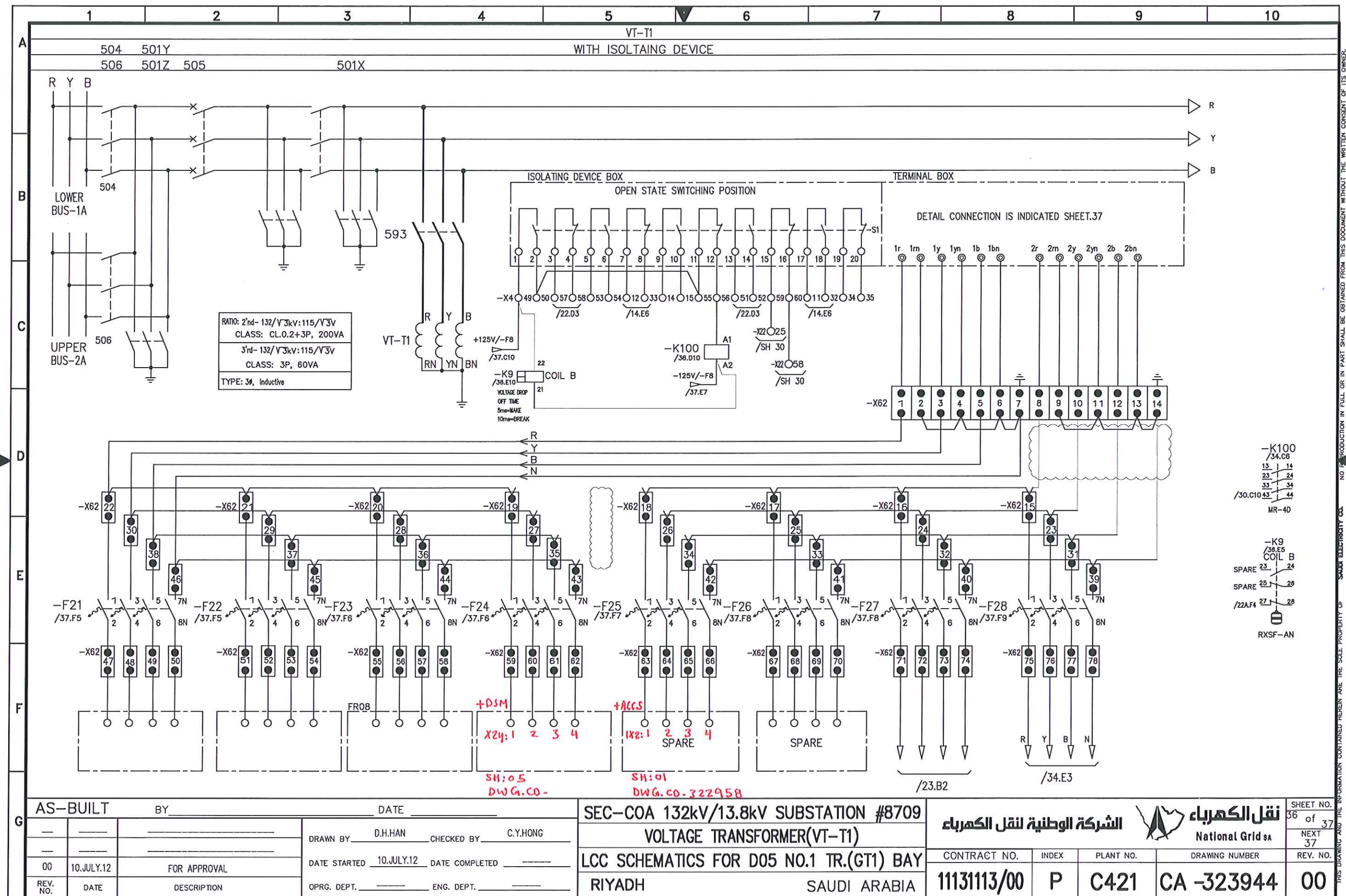
DRAWN BY D.H.HAN		CHECKED BY C.Y.HONG	
DATE STARTED 10.JULY.12		DATE COMPLETED	
OPRG. DEPT.		ENG. DEPT.	

SEC-COA 132kV/13.8kV SUBSTATION #8709
SHORT CIRCUIT AND DISCONNECTING CT'S(CT5) & CT SECONDARY BOX TERMINAL/LABELLING
LCC SCHEMATICS FOR D05 NO.1 TR.(GT1) BAY
RIYADH SAUDI ARABIA

CONTRACT NO. 11131113/00		INDEX P		PLANT NO. C421		DRAWING NUMBER CA -323944	

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